DECEMBER, 1940

ELECTRICAL SOUTH

HUNTER ZEPHYR fans and cooling systems are also increasing their popularity in the middle and southwestern territory.

During the coming season—which is HUNTER'S 45th year in the exclusive production of fans and ventilators—newer and better performance and appearance standards will be set by this pioneer company.

Please write for information and surveys now while dependable delivery promises can still be made.

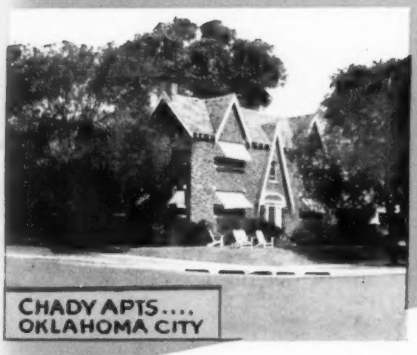
HUNTER FAN & VENTILATING CO., INC.

Factory: FULTON, N. Y.

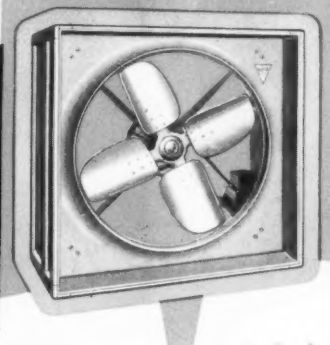
General Sales Offices: Memphis, Sterick Bldg. *Eastern Sales Office:* New York, 92 Warren Street

Sales Offices:

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS DAVENPORT DETROIT HOUSTON KANSAS CITY
LOS ANGELES NEW ORLEANS PHILADELPHIA PITTSBURGH ST. LOUIS



CHADY APTS.... OKLAHOMA CITY



CENTURY APTS... OKLAHOMA CITY

JEFFERSON HOTEL SHREVEPORT LA.

HUNTER Century

GRAYSON HOTEL SHERMAN TEXAS

Wires Cut
Blue Prints Stolen
Sabotage Seen in Factory Fire
Intruder Seized in Aircraft Plant
G-Men Warn Against Unprotected Grounds

HELP MEET THIS CHALLENGE . . .

Free Bulletin

LISTS DANGER POINTS

This new GRAYBAR Bulletin, "Planned Protection Can Meet This Challenge," starts off with a *check list of danger points* that will aid greatly in pointing the way to electrical preparedness among your industrial customers, in addition to the direct value it may have for your own protection.

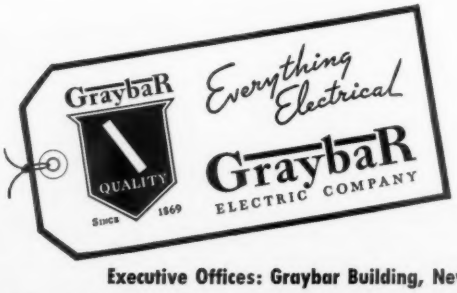
This check list is backed up by specific suggestions for effective floodlighting that protects plant buildings from intruders by a "wall of light." The place of alarm systems and signaling equipment to protect against fire and theft and to give immediate warning in case of emergency is given, along with suggestions for improving intercommunication. Suggestions for protecting industrial power and lighting circuits from interruption are also made. Write for a copy of Bulletin G-67 today. Graybar Electric Co., Graybar Building, New York, N. Y.

WITH *Planned Protection*

At any hour, another industrial plant or service important to national defense may be challenged by dangers like these. The time to meet the challenge is *in advance;* the way to meet it is with *planned protection.*

Floodlighting of yards, sidings, storage tanks and the like is one essential part of such a plan. So are modern alarm and intercommunication facilities, and means for making electrical circuits more completely interruption-proof. And, in each of these — Lighting, Signaling, Wiring — special assistance on plant protection is now available from GRAYBAR.

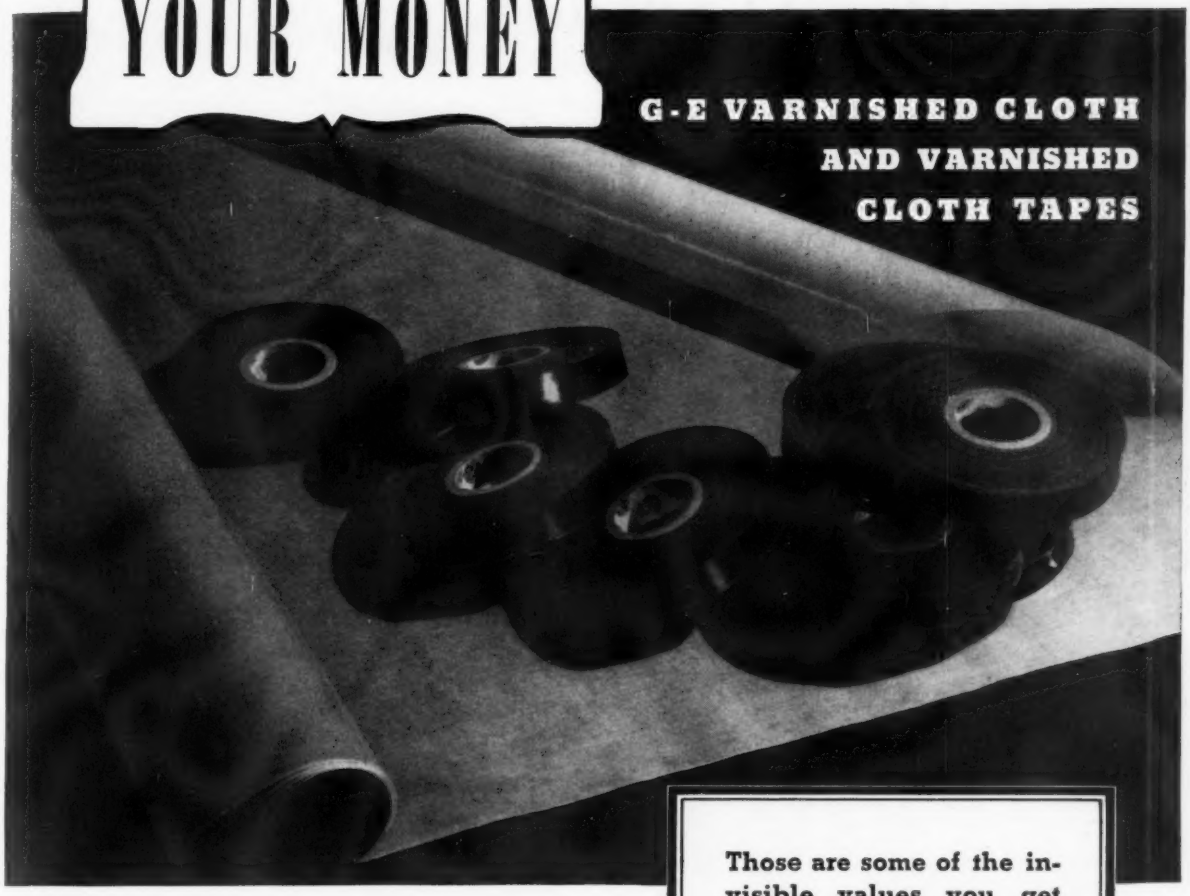
Whether you face a problem in assuring safety and uninterrupted service at your own plant, or want to inform yourself in order to assist your industrial customers, you'll find it well worth while to see what GRAYBAR has to offer. You'll get the same thorough information and "action-service" on the products needed for complete protection that you've always had from GRAYBAR on your other electrical requirements.



Executive Offices: Graybar Building, New York

GRAYBAR—IN OVER 80 PRINCIPAL CITIES

MORE FOR YOUR MONEY



HERE'S WHY:

CLOTH: Bought from best possible sources of supply. Chosen for strength, evenness of weave, freedom from specks. Must have minimum of nap, dressing and sizing so it can hold maximum amount of insulating varnish.

VARNISH: General Electric has over 30 years of experience in the manufacturing of insulating varnishes. We are constantly developing new varnishes. Only those best adapted for treating cloth are used for this purpose.

PROCESSING: Cloth makes 16 trips back and forth through a 90-foot oven—traveling more than 1/3 mile for each coating. Varnish continuously circulated and strained. Viscosity constant.

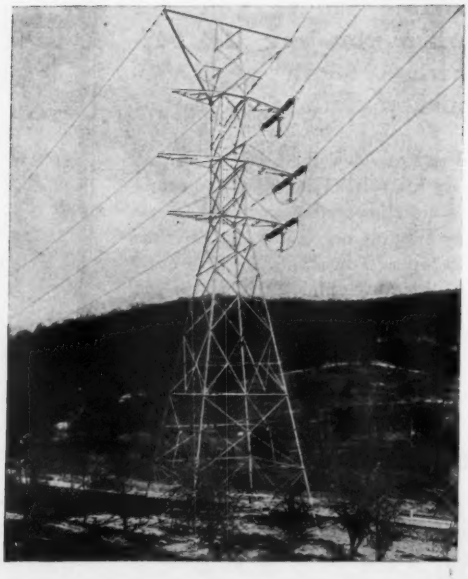
Those are some of the invisible values you get when you buy G-E varnished cloth and varnished cloth tapes.

The New General Electric Insulating Materials Catalog has an entire section devoted to varnished cloth — another entire section devoted to tapes. You should have a copy of this new catalog. If you do not, write to section M0210, Appliance and Merchandise Department, General Electric Company, Bridgeport, Connecticut.

GENERAL ELECTRIC

ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A.
Subscription rates United States and Possessions $1.00 for one year; $2.00 for three years; Canada $1.50 per year; Foreign Countries $2.00 per year.
Entered as second class matter at postoffice, Marietta, Ga., under Act of March 3, 1879.
Volume 20 **Number 12**

There's no trick to building A.C.S.R. lines.



Good engineering, proven materials, and construction crews who know their stuff; the power line built according to that formula is certain to be reasonable in cost and tops in performance.

A.C.S.R. combines in one conductor light weight, high strength, resistance to corrosion and high electrical conductivity. The soundness of the A.C.S.R. principle and A.C.S.R. engineering standards are being continuously confirmed on thousands of miles of line. Some of these lines have been in service over a quarter of a century. ALUMINUM COMPANY OF AMERICA, 2164 Gulf Building, Pittsburgh, Pennsylvania.

A·C·S·R

Aluminum Cable Steel Reinforced

FOR RURAL LINES AND POWER TRANSMISSION

WHEN YOU BUY **HUBBARD 4-11-44 WIREHOLDERS**
THEY HAVE BEEN EXPOSED TO A MOST CAREFUL SCRUTINY FOR MANY YEARS—AND FIELD TESTED "BY THE CARLOAD."

HUBBARD AND COMPANY
PITTSBURGH . . . OAKLAND CALIFORNIA . . . CHICAGO

"HANG THE LOAD ON HUBBARD HARDWARE"

A not so merry "MERRY-GO-ROUND"

Cable oils sent to the rotating tray may be doomed, for here their ability to resist "breakdown" is determined

CAREFUL research keeps cable users from the predicament of the small boy who finds that the "merry-go-round" has broken down. Anaconda engineers continually are building greater resistance to "breakdown" into Anaconda wires and cables through tests such as the one shown here.

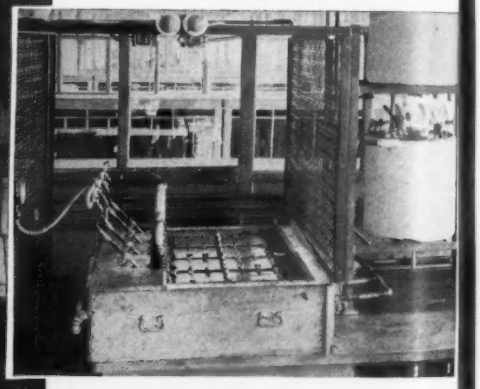
It is an oil aging oven in which there is less than ½° total temperature differential at all times. It is a severe test for the oils and only those that stand up... those that show the greatest chemical and electrical stability... are chosen. Further improvements in cable saturants are facilitated by laboratory methods of saturating tape wound cable models and subjecting them to cycles of elevated temperature and stress.

Painstaking research methods like these can mean but one thing to you . . . that wires and cables bearing the Anaconda trademark are of the highest quality.

ANACONDA
from mine to consumer

40851

This is a precision rotating-tray, air circulated aging oven through which Anaconda engineers determine best oils for cable saturants.



Above—cable model tanks mounted in thermostatically controlled bath with high-voltage vacuum and pressure entries.

•

Left—dielectric properties of cable models under test are studied by means of this bridge.

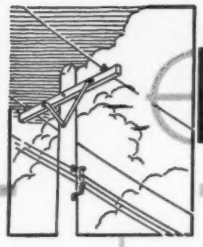
USE MODERN IMPROVED **Anaconda Wire & Cable**

ANACONDA WIRE & CABLE COMPANY, General Offices: 25 Broadway, New York City; Chicago Office: 20 North Wacker Drive

Subsidiary of Anaconda Copper Mining Company. Sales Offices in Principal Cities

DECEMBER, 1940

Volume 20 No. 12



ELECTRICAL SOUTH

J. C. MARTIN, Manager
RICHARD P. SMITH, Promotion Manager
W. E. COOGLER, Production Manager

Editorial and Business Offices
GRANT BUILDING
ATLANTA, GEORGIA

MEMBER OF A. B. P.
MEMBER OF A. B. C.

ANNUAL SUBSCRIPTION—$1.00
THREE YEARS—$2.00
CANADA—$1.50; FOREIGN—$2.00

Business Representatives:
L. E. ALLEN, 189 West Madison St., Chicago, Ill.
L. R. MCCARTY, 325 Winding Way, Merion, Pa.
W. S. CUSHION, 506 The Arcade, Cleveland, Ohio.
W. A. MCGEE, P. O. Box 562, Charlotte, N. C.

Published Monthly by
W. R. C. SMITH PUBLISHING CO.
Marietta and Atlanta, Ga.

W. R. C. SMITH, *Chairman of Board,*
W. J. ROOKE, *President,*
T. W. MCALLISTER, *Vice-President and Editorial Director,*
E. W. O'BRIEN, *Vice-President,*
W. S. CUSHION, *Vice-President,*
R. W. PHILIP, *Vice-President,*
O. A. SHARPLESS, *Treasurer,*
J. C. MARTIN, *Secretary,*
E. L. PHILPOT, *Asst. Secretary and Treasurer*

Publishers Also of
COTTON
SOUTHERN HARDWARE
SOUTHERN AUTOMOTIVE JOURNAL
SOUTHERN POWER AND INDUSTRY

T. W. McALLISTER, Editorial Director CARL W. EVANS, Editor
NAT M. JOHNSON, Southwestern Editor

Contents

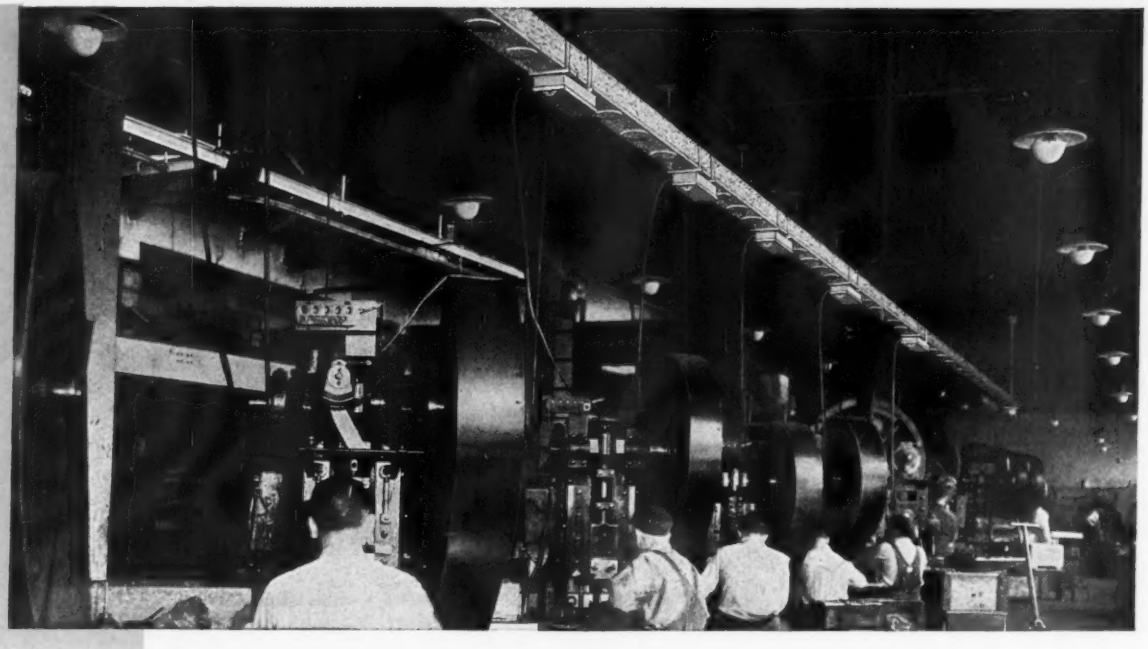
Electrical Business Trends	7
Demonstration, Display—Factors in Range Selling	8
Dallas Dealers Participate in Roaster Sales Program	10
Smart Ideas Brighten Christmas Advertising	11
More Home Heater Sales for Dealers	12
Power Divisions of Oklahoma Utility Association Meet	13
Southeastern Utility Executives Attend Sales Conference	16
Underfloor Raceways Used in Dallas Bank Wiring Job	21
Successful Wiring Promotions Studied at Conference	22
Branch Circuit Design Affected by 1940 Code Changes	24
Designing Motor Branch Circuits	26

Departments

Appliance Service Notes	29
Motor Rewinding and Repair	30
News of the Industry	32
Manufacturers News	39

Copyrighted 1940, W. R. C. Smith Publishing Co., Atlanta, Ga.

Entered as second class matter at Marietta, Ga., U. S. A., under Act of March 3, 1879.



Move the machine—plug in—*go!*

It's as simple as that when the plant is equipped with Plugin ⒻⒶ Busducts. The easily-accessible outlets, conveniently spaced, make it possible to place machines at any desired location—to plug in quickly—and to commence operation without delay. With Plugin ⒻⒶ Busducts, use Feeder ⒻⒶ Busduct to provide ample capacity for present and future power requirements.

THE DEFENSE JOB—

YOU—

and the

FRANK ADAM ELECTRIC CO.

Speed and efficiency will be required of you on your share of the defense job. Expert advice will be needed on your electrical installations for both power and light. . . . Centrally located, with a highly trained engineering organization in strategically located cities, the Frank Adam Electric Company is ready to consult with you, and to make quick deliveries in this emergency. You can rely on prompt and complete service, not only on ⒻⒶ Busducts, but on other trouble-free ⒻⒶ products — such as

Shutlbrak Safety Switches . . . Power and Light Distribution Panelboards (Standard and Column Types) . . . Klampswitchfuz Narrow Distribution Panelboards (for floor and wall mounting) . . . and many others.

This is the *Modern* Way!

This is the compact, flexible and convenient method for power and light distribution. The busducts may be attached to either walls or ceilings. Flexibility is provided by suitable elbows, tees, end boxes, intermediate feed-in and feed-out boxes—all adapted to fit required space or position. Future extensions may be made readily to existing installations.

ⒻⒶ Busducts—both Feeder and Plugin types—are made in standard 10-foot sections. Each section of the Plugin type is arranged with nine plug-in outlets on 12-inch centers. The copper bus bars (contained in enclosures of galvanized steel or aluminum) are rigidly supported at 30-inch intervals by specially designed insulators that assure proper spacing—to meet requirements of the National Electrical Code. Contact surfaces of connecting bars are silver-plated, to prevent oxidation. For 2, 3 and 4-wire feeder systems; 250 volt DC, 575 volt AC, maximum.

ⒻⒶ Sales-Engineers Can Help Manufacturers, Architects, Engineers and Contractors With Their Distribution Problems

Their long experience and training are at your service—without obligation. Write for the name and address of the one nearest you. Also, for Bulletin 61, which contains complete descriptions, applications and detail drawings of ⒻⒶ Busducts. . . . Frank Adam Electric Company, St. Louis, Mo.

EST. 1891 — THE SIGN OF A FA BETTER JOB

Frank Adam

ELECTRICAL PRODUCTS

for Industry

FRANK ADAM ELECTRIC CO.
ST. LOUIS, MO. U.S.A.

Electrical Business Trends

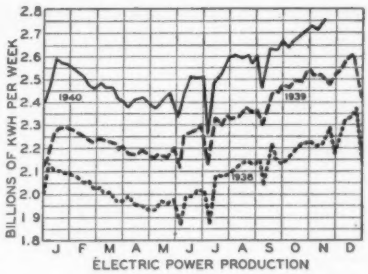
PROSPECTS for the appliance dealer during the month of December are especially good. Dollar sales registered in the country's retail stores from Thanksgiving to Christmas will, in most lines of trade, exceed the dollar volume of 1933, according to the National Retail Dry Goods Association. Total sales will come within shooting distance of the sales volume in the boom-year Christmas of 1929, but because retail prices are considerably under the Christmas 1929 general price level, the physical volume of merchandise sold this season will unquestionably be the heaviest on record. Although there will be some increase in luxury buying, the Association believes the main interest will be in regular holiday merchandise of a more or less practical nature.

Thousands of appliance dealers benefited from the impetus given washer and ironer sales in October by National Washer-Ironer Week. Home laundering equipment shipments smashed through to new all-time highs in October. Total household washer sales for October, 1940, were 168,527, an increase of 9.5 per cent above the former all-time high reported in October 1936. October sales were 13.1 per cent over sales in October 1939.

Increasing acceptance of the electric ironer is seen in the sales volume of 23,283 units reported for October, 1940, an increase of 92.4 per cent over sales reported in October, 1939.

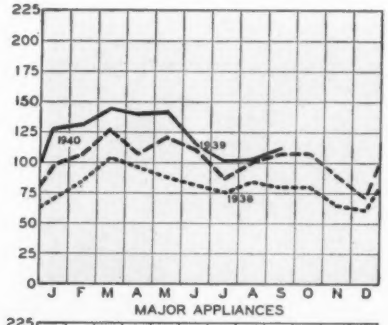
Range and refrigerator sales data is available only for the month of September. Increases over the same month of last year were recorded nationally, as indicated by the charts below. In the southeastern states, refrigerator sales exceeded those of the same month a year ago by 75.4 per cent.

Sales activity in motors and generators, industrial materials, and distribution equipment for September 1940, in comparison with previous months are indicated in the charts below. Industrial production, in general, reached an all-time high in October as the Reserve Board's index advanced to 128 from 125 in September. The previous peak of 126 was established in December, 1939. This upward trend was continuing in November, and while a seasonal decline is usual in November, current data from several major industries indicate some actual rise in industrial output from October volumes.

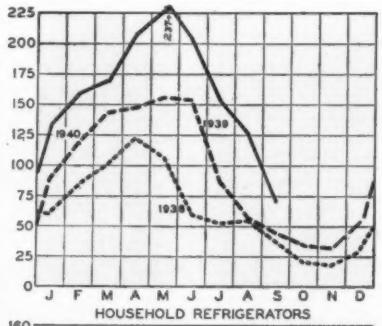


ELECTRIC POWER PRODUCTION

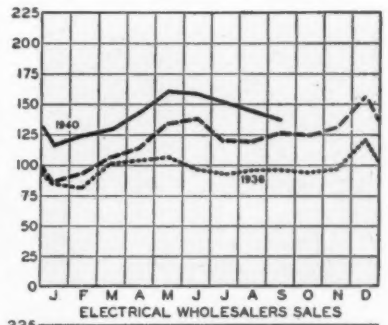
Per Cent Changes 1940 Over 1939	Week Ending Nov. 23	Week Ending Nov. 16
New England	+ 4.9	+ 3.6
Middle Atlantic	+ 7.8	+ 9.6
Central Industrial	+ 9.7	+13.2
West Central	+ 6.2	+ 6.3
Southern States	+ 9.0	+ 9.6
Rocky Mountain	+ 3.8	+ 4.3
Pacific Coast	+ 7.1	+ 3.8
National	+ 8.6	+ 9.4



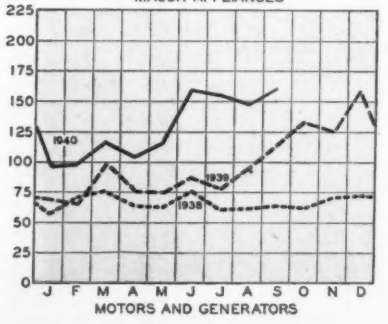
MAJOR APPLIANCES



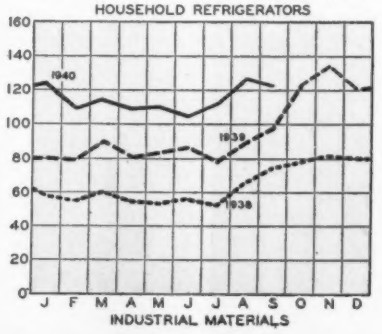
HOUSEHOLD REFRIGERATORS



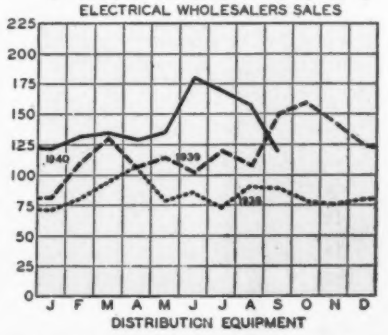
ELECTRICAL WHOLESALERS SALES



MOTORS AND GENERATORS



INDUSTRIAL MATERIALS



DISTRIBUTION EQUIPMENT

All of the above indexes of electrical business activity are based on figures available from the National Electrical Manufacturers Association, except the index of electrical wholesalers' sales which is based on data published by the United States Department of Commerce. The indexes on motors and generators and distribution equipment are based on orders received, while the index on industrial materials, including such items as electrical porcelain, mica, vulcanized fiber and laminated products, is based on sales billed. The index on distribution equipment includes such items as high voltage insulators, paper cable, power switching equipment, power distribution transformers, and varnished cambric cable. The index on major appliances does not include refrigeration. The index on household refrigerators includes complete household refrigerators, separate household evaporators, and separate systems of 1/4 horsepower or less. The index on electric power production is based on data released by Edison Electric Institute. 1936 averages taken as 100%.

DEMONSTRATION, DISPLAY—

Salesman: This range adds distinction to any kitchen.

ALL SIGNS indicate that the next twelve months will be a banner year in electric range-selling history. Climaxed in current models, the cumulative effect of year-to-year improvements give this type of kitchen equipment a wider scope in use-value than ever before. It is priced at levels which cannot fail to tempt buyers in the lower-income brackets. And never has it offered more eye-appeal!

In the accompanying photo-sequence are some of the high points in the demonstration methods successfully used by F. V. Waite, owner of Waite Electric Appliances in Miami, Fla. These photographs show how the prospective customer can be persuaded, under the dealer's direction, to convince herself of the ease and convenience of electric cooking. (The photos show Mr. Waite and a customer.)

During the two years ending this month, Mr. Waite, whose "organization" consists of one salesman and a bookkeeper, besides himself, has sold approximately 200 electric ranges.

The highlights of his selling technique are good display, well-planned advertising and demonstration, and these have been important factors in his successful sales record. His location on N. E. Second Avenue at 16 Street, where he has operated for the past five years, is excellent.

"Mrs. America is decidedly 'range minded'," says

Salesman: Kettle cooks an entire meal at small cost.

Salesman: Use the top as a serving table.

FACTORS IN RANGE SELLING

Mr. Waite. "And for good reason. A considerable portion of her budget goes into the cost-of-production of the family meals. Besides that, a good share of her time enters into their preparation.

"In selecting a range, therefore, she very definitely knows what she wants. It usually can be expressed in three words — beauty, convenience, and economy. And the dealer, who can prove to her satisfaction that the electric range he sells combines these features, gets the order. Even, if she has to crowd the aforementioned budget to make the purchase.

"Streamlined appearance, alone, cannot be depended upon to make sales. Good display — like consistent, well-spotted advertising—is vitally necessary to volume selling. But they are only two sides of the sales-triangle. The third, and to my way of thinking the most important, is *demonstration.*

"Today's demand for electrical appliances was built up by that method. Long ago, vacuum cleaner and washing machine salesmen proved the result-getting value of home demonstration. And while it may not be practical, or necessary, to install an electric range in the prospective buyer's kitchen to show that it will cook the family meal, most of the selling fundamentals we would use there are available for display room demonstrating.

"When she considers the (*Continued on page* 50)

Salesman: This oven will roast a 25-pound turkey.

Salesman: Warmer keeps food hot for late arrivals.

Customer: I'll love cooking with this. It's so easy.

Dallas Dealers Capitalize Roaster Sales Program

A THOROUGHLY planned advertising and sales promotion campaign on electric roasters, staged by the Dallas Power & Electric Co., has resulted in a steady uptrend in roaster sales by some 115 dealers in the Dallas area, according to P. M. Rutherford, Jr., advertising and sales promotion manager.

Advertising was begun in May and extended through August with all three of Dallas' daily newspapers. Insertion dates and proof sheets of all advertising were given to the dealers ahead of the campaign along with practical suggestions to each one for his tieing in smaller, supplementary advertising of the so-called "name and address" type.

Poster panels advertising electric roasters were placed in strategic locations throughout the city in February and in May, with 36 locations being used each time. Special electric roaster recipes were published in the May and July issues of the Company's house magazine, "Dallas Hospitality," which has a regular mailing list of approximately 65,000 residential users of electric power.

Sales aids in the nature of leaflets were prepared by the Company and given to any dealer requesting them for free distribution. Dealers found them particular valuable for their salesmen to carry as a pocket reference reminder of the many uses for electric roasters.

Sales Training School

At the beginning of the season — ahead of the first "natural" for electric roaster sales, Mother's Day — an after-hour "school" for dealers was held by the sales department of the Dallas Power & Light Co. in their auditorium in the main downtown building. Here, contributing factors to more sales were outlined and dramatically illustrated.

Display methods and suggestions were demonstrated so that dealers might properly display merchandise in a way that would invite store traffic to examine it. It was pointed out that the roaster is a gift item; "Show it in a cellophane wrapping," urged the display manager. Pointedly suggested was the idea of placing an electric roaster with all of its accessories in every window display showing kitchen, dining room and breakfast room equipment because, it was explained, "The roaster is used in all of those rooms; it belongs there; the more often you remind potential buyers of that fact, the more sales you will make."

Actual cooking demonstrations were encouraged. Dealers were urged to avail themselves of the services of the Company's hostesses in putting on a cooking demonstration with an electric roaster and passing out to all tempting, actual bite samples of the delicious foods prepared in one of them in the dealer's store.

The ideal way of training sales people in a dealer's store, according to advice from the Company's school, would be the "loaning" of one roaster to employees for actual home use. Arranging a trip schedule for one such roaster, so that each employee would have it in his home over several nights where he might actually get familiar with its varied uses, was advanced as the ideal means of getting every sales employee thoroughly sold on the roaster to the point where he or she could sell many of them to prospects afterwards. The salient feature of this plan, according to Mr. Rutherford, is the simple fact that no sales person can show a prospect how an electric roaster "works" in all its varied ways, unless that sales person knows, by experience, the roaster's full story of accomplishment, including roasting, baking, broiling, frying, toasting, steaming and sterilizing, roll warming, etc.

Supporting Advertising

Advertising, starting on May 3 and closing on August 14, opened with a reminder that "Cooking is so much easier for Mother in an Electric Roaster." Economy was pointed out: "less than 4c a meal." Dealers, advised well in advance of the opening ad, arranged for their smaller tie-in ads to bank around and on opposite page from this Company ad, so that their addresses and price mentions might be associated with the page-dominating Company space.

First week of June naturally brought thoughts of June Brides and their uncertain cooking. Head-

(*Continued on page* 49)

These are Carefree Days when you cook
IN AN Electric Roaster
...and the Electricity costs less than 4¢ a MEAL
NOW'S the time to
ENJOY AN Electric Roaster
...and the Electricity costs less than 4¢ a MEAL
It's Cool and Clean...
It's Cheap to Use...and
It Gives Real Kitchen Freedom!
No wise cracks about her cooking
IN AN Electric Roaster
and the Electricity costs less than 4¢ a MEAL
VISIT YOUR DEALER'S TODAY
DALLAS POWER & LIGHT COMPANY
ELECTRICITY IS CHEAP in DALLAS

The past twelve months have seen a steady upward trend in roaster sales in the Dallas area. Promotional efforts of the Dallas Power & Light Co., in both advertising and sales training, have greatly benefited the more than 150 dealers handling this appliance. Shown here are some of the 3-column ads that formed the nucleus for a considerable amount of "tie-in" advertising by individual dealers.

Smart Ideas Brighten Christmas Advertising

GENUINELY attractive advertising copy for the electrical appliance store is at a premium during the Christmas season. Each give advertisement during the two weeks preceding the "day," whether large or small, must compete with more and better advertising layout than at any other time of the year.

Here are a few of the special attraction features in layout, many of which were used by southern electrical and appliance dealers to make their Christmas copy distinctive and effective.

Drama and boisterous humor made a newspaper attraction of copy in which, upper left corner, Santa Claus and several mothers and fathers were shown in a huddle, towering out of a large Christmas wreath with its suggestion of a football "bowl," surrounding them at their feet. In the "air" about the figures was printed "25 year old Christmas store scheduled to play Santa Claus in Annual Gift Classic. Fans jubilant. Entire store pointed for a big week. C'mon, Santa, Let's go!"

Attention was called to certain electrical needs which one might overlook at Christmas time, as gifts, in an advertisement which suggested "You'd never think of these ....."

Listed were such things as "That extra bulb needed in the guest room," "The extension for the lamp in the hall you have continually overlooked," "New cord for the iron in the basement"—odds and ends which might serve to bring the customer into the electrical shop for a larger sale.

Another layout was divided into four sections. In each section was a drawn head of "mother," "dad," "sister," "brother." Under each illustration were listed three or four electrical needs that these members of the family might use such as electric ironer and washer, electric refrigerator, for mother; electric shaver, etc., for father; electric mixer, for sister—with the suggestion that she would be relieved of "beating" foods for mother in the kitchen, and so on. The appliances, of course, need not be directly applicable to needs of father, sister, and brother, but copy can suggest that they help keep these three individuals out of the kitchen.

"Last minute ideas for the Christmas tree" was the announcement in final copy carried by another electrical department. Listed were small appliances which the department wished to "push."

"Christmas bell ringers" was the feature of another layout. The advertisement was sectioned off in the upper portion into 6 spaces with Christmas bell cuts heading each section and the suggestions were outlined underneath in each section.

Appliance dealers of New Orleans found this an effective means of promoting electrical appliances as gift items. Their individual advertisements might not have attracted a great deal of attention had they been distributed throughout the paper. Combined into a single group, however, with the large banner head "Make It an Electrical Christmas" their advertisements will compete favorably with those of competitors for the the Christmas Gift dollar.

Feature of another electrical shop advertsiement was the three-point Christmas tree, with illustrations of electrical merchandise suitable to Christmas upon it. The "foliage" portion of the tree was in the block like shape of a triangle, point at the top, broad at the base, and mounted in a "flower pot." The tree could be sectioned into smaller divisions in the drawing, with small triangle at the top, three spaces across the middle, four at the base, and presenting an individual appliance gift suggestion in each of these sections.

Catching the eye quickly was the advertisement showing a picture of a large outdoor billboard, drawn at the top of the copy, with half a dozen Santa figures clambering about the board, trying to paste up the billing. The "poster" being pasted up in the drawing gave the name of the electrical store, with "Christmas gifts" printed just beneath the name.

A southern electrical dealer highlighted his store in a small ad in this way: the copy layout, two columns by four inches, had a heavy black border. Two black "hands" pointed inward, at top, from either side toward the bold faced word, "Notice." Beneath this was "To Christmas Shoppers: If you are looking for appropriateness and good merchandise, you can't do better than shop in our appliance department."

Unique was this store advertisement: copy featured, upper left, a black and white night view of the store, exterior. But wording on the store front sign stood out in bright red lettering on the newspaper page. Effect was arresting.

Large advertisement featuring electric washing units as gifts used a housewife's head, top left, with French phone, talking to Santa "head" with French phone, in upper right. The telephone cord between the two phones looped across the top of the page. Title of the advertisement read "May's Appliance Store rings a straight line to her desire."

If your advertisement is too small for an adequate number of pictorials on smaller appliances being suggested as Christmas gifts, try the list. Put a check mark at the top and small "ballot sheet boxes" beside each name on the list with heading "Check these as you go along, too!"

The comic note was struck in copy which pictured, upper left corner, head of a man tearing his hair. Printed in rough lettering, with words broken by amusing illustrations, such as a small drawing of a man holding an electric refrigerator out in the palm of his hand, a lady hugging a refrigerator, etc., was the message, "Dear sir: Don't tear your hair. Come down and have a talk with us about the most modern gift of all, a refrigerator."

More Home Heater Sales For Appliance Dealers

Home heaters are becoming an important line to hundreds of home appliance dealers. For these dealers, Earl Bridges, manager of home heater sales for Norge Division of Borg-Warner Corp., has some sound advice on heater merchandising:

"Start your sales effort early and give home heaters prominent display, even though the weather remains warm, to remind prospects that as summer wanes winter cannot be far behind.

"Emphasize the desirability of *modern* equipment as contrasted with the many annoyance 'features' of ala-fashioned stoves.

"Canvass the resort areas, tourist camps, filling stations and rural schools. Use sporting goods dealers as bird dogs. They know the men who might buy heaters for hunting and fishing lodges.

"Check storage buildings and warehouses where you probably will find a dingy office occupied by (1) a rusty little stove (2) a man with a cold who might appreciate some real heating comfort.

"On every sale, be certain that the heater is properly installed by a competent man who realizes the importance of providing sufficient draught to obtain best result with heat producing fuel oil. It's far better to charge a small fee for an entirely satisfactory installation than to give the buyer a bungled job gratis. Some dealers now are contracting their installations with heating specialists.

"Demand substantial down payments and don't give too long terms. Many buyers of home heaters rent their homes and you might as well face the fact that any day may be moving day.

"Gain word-of-mouth advertising support from satisfied owners by making sure that each buyer understands the proper fuel to use in his unit and has mastered the easy details of adjustment and operation.

Economy Can Be Stressed

"Stress particularly the fact that top economy requires a flame high enough to vaporize the fuel completely and that incomplete combustion not only creates insulating carbon but may waste as much as two-thirds of the heat potential contained in the oil.

"Above all, 'don't send a boy.' If you make the mistake of selling a heater which lacks the capacity to do an adequate job, they'll never stop complaining and you'll never hear the last of it. Better skip the deal entirely rather than make a purely price sale which leaves a 5000-cubic-foot-capacity unit trying to heat a 7000-cubic-foot home."

Power Divisions of Oklahoma Utility Association Meet

PROBLEMS arising from more stringent regulation by government, higher taxes, and a more complex domestic and industrial life were discussed in addresses and papers delivered before the Western District Conference of the electric light and power division, Oklahoma Utilities Association, held at Chickasha, Okla., October 22.

Two federal agencies, the Rural Electrification Administration and the Federal Bureau of Investigation, were represented by speakers on the program, who invited cooperation of electric utilities.

C. H. Guernsey, consulting engineer, of Cherokee, Okla., said there is no reason for electric light and power companies to clash with REA authorities over the rural electrification program. While introducing the speaker, Henry E. Bowen, district manager of the Oklahoma Gas and Electric Co., at Enid, Okla., admitted that many misunderstandings had arisen between utilities and the rural electrification officials. He declared that both sides were in part to blame for these clashes but that a plan finally has been worked out in Oklahoma whereby REA officials and utilities can work in harmony. He explained that the speaker is not a regular federal employee but had supervised construction of several REA cooperative lines in Northwestern Oklahoma.

Better Relations with REA

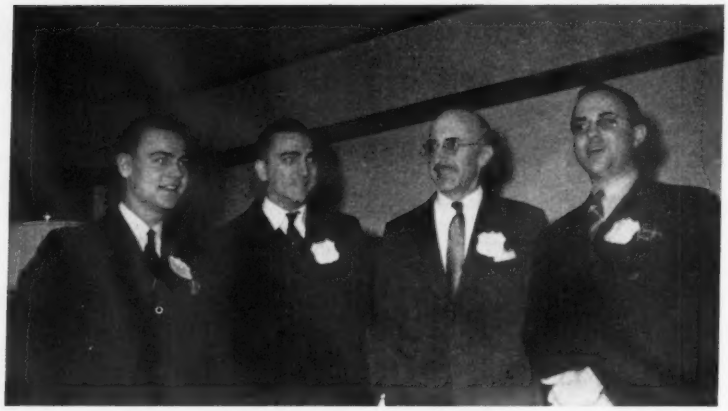
Mr. Guernsey declared that there is no reason for a hitch between REA and utility officials, since both are interested in wide distribution of electricity, and the federal agency is carrying it to sparsely settled rural districts where electric light and power companies would not venture to risk their investments. He explained that the REA-financed cooperatives found it possible to build lines into thinly populated sections because of easy financing terms and a continuing campaign to increase the use of electricity in the country.

"Electric utilities are selling electricity to many of these REA lines," the speaker said. "Farmers and their wives and families in thinly settled districts are as much entitled to the comforts of electrical service as are people living in towns or more thickly populated areas. When we started the program many people, including some of our prospective customers, expressed doubt that the REA lines would ever pay out and that the federal government would ever get back the money it had loaned to electric cooperatives. The REA, however, has made terms so easy that these cooperatives have 30 months to start making interest payments and four years before beginning to pay on the principal.

"Local managers of REA cooperatives are carefully selected, and their accounts are checked by methods similar to those employed for auditing accounts of postmasters. The result has been that out of 579 electric cooperatives in the United States 280 are paying all interest and principal on their loans while 299 lines have not been constructed or energized long enough to come into the period for making such payments. Only a very small

Seated at the head table during the luncheon at the New Chickasha Hotel, from left to right, are A. P. Burns, newly elected western district chairman; B. E. Lowe, who presided at the luncheon; Henry E. Bowen, retiring western district chairman; John Worley, mayor of Chickasha, and J. C. Happeny, Sand Springs, chairman, Electric Light and Power Division, Oklahoma Utilities Association.

The registration desk, just before opening of the western district conference, was a busy place. Registering the delegates, left to right, were: Kate A. Niblack, secretary, and Thelma T. Jones, both of Oklahoma Utilities Association, and Nola Dean, Southwestern Light and Power Co.



Left to right, Dempsey Ransbarger, R. L. Dunten, M. Douglas Parks, and B. E. Lowe, all of Southwestern Light and Power Co., Chickasha, Okla.

percentage will fail to pay out on their loans."

Public utilities know better than government officials how to guard their properties against sabotage, declared H. E. Anderson, Oklahoma City, in charge of the Federal Bureau of Investigation for Oklahoma, in a talk in which he invited the cooperation of all utility executives and employees in protecting these vital public service facilities. He said that it would be very easy to damage such properties unless management and employees are at all times alert.

Plant Protection Needs

The FBI speaker pointed out that there are spies and propagandists for foreign governments in every state and that the oil fields and refineries of Oklahoma and the southwest are outstanding targets for possible sabotage. He warned, however, against undue alarm and especially against "witch hunting" or voluntary spy hunting organizations of citizens. He advised all persons hearing rumors or having tips on subversive activities to report to the FBI headquarters in Oklahoma.

"We had ninety complaints in one day coming into the Oklahoma City office," Mr. Anderson said. "Many of these were based on mere rumors or suspicions but we are glad to sift out all such complaints, place a watch upon those whose conduct is suspicious and turn over to the local police cases where actual violations come under their jurisdiction. We are cooperating fully with city, county and state peace and law enforcement officers and will help them by supplying evidence at trials. There is not, and I hope there will never be, any secret police operating through our department. We want to see that every citizen is guaranteed his constitutional rights and that no unjust or un-American methods are used to protect our country against espionage and sabotage."

Fear that expansion of taxes, federal control of practices, wages, hours and other management problems, would leave business in a precarious condition, was expressed in a paper by Erle P. Halliburton, of Duncan, Okla., head of a big oil well cementing firm, which was read at the meeting by S. I. McElhoes, vice president, Southwestern Light and Power Co., Chickasha. The talk was made recently by Mr. Halliburton to his employees, placed in printed form and a copy handed to Mr. McElhoes.

The paper expressed fear that management of business may be entirely divested of control of its own affairs and that management and employees alike may soon be working for the government. The government now gets $14 in taxes for every dollar which goes to the stockholders of his company, Mr. Halliburton asserted. The federal government, he continued, has lived beyond its income for the past eight or nine years and is heading into bankruptcy if this trend is continued.

New Horizons Faced

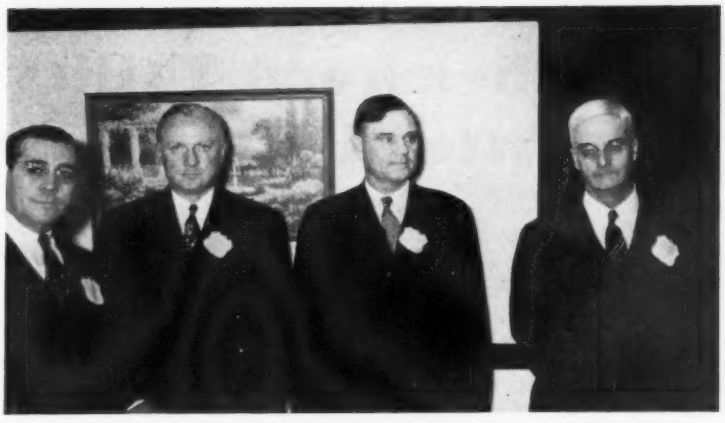
The electric light and power industry faces new horizons of opportunities and its pioneering days are not over, although its problems will arise along different lines than in the past, said J. C. Happenny, president, Oklahoma Power and Water Co., Sand Springs, Okla., in opening the Western District conference at Chickasha, as chairman of the electric light and power division of the Oklahoma Utilities Association. He talked along similar lines when he opened the Eastern District conference at Tulsa, Okla., October 25.

Mr. Happenny said that the early pioneers, such as Edison and others, wrestled with new inventions and applications of electricity and that they were followed by those who pioneered in perfecting and expanding generating and transmission facilities. "Now we are facing the possibilities of scientific discoveries which will further transform our industry, such as carrying of electrical energy through the air without wires. We also are facing a number of intangible things such as our more complicated relationships with our customers and our government," Mr. Happenny declared.

Cooperation of the electric light and power industry in working out

Left to right, Gordon Lynn, E. C. Jenkins, H. A. Dodson, and L. W. Countway, all of Southwestern Light and Power Co.

problems of national defense and putting people back onto the farms was invited by John D. Worley, mayor of Chickasha, in his address of welcome. He also asked the delegates to study the proposed Oklahoma constitutional amendment to give the cities and towns a greater share of gasoline taxes. He declared that municipalities are being seriously cramped for revenues since state advalorem taxes have been abolished. George Hutto, Oklahoma Gas and Electric Co., Pauls Valley, responded to the mayor's address.



Left to right, John C. Kevin, district manager at El Reno; Glenn C. Kiley, western division manager, and Fred Teten, district manager at Woodward, all of the Oklahoma Gas and Electric Co., and S. I. McElhoes, vice president Southwestern Light & Power Co., Chickasha.

Outdoor Metering Problems

Talks and discussions on the subject, "Outdoor Metering and Current Diverson" aroused much interest at the meeting. The leading paper on this subject was presented by Houston Dodson, Southwestern Light and Power Co., Pauls Valley. He said that his company began moving meters outdoors as a result of the depression. The program reduced the amount of diverted current and cut time of reading meters about 50 per cent. It also produced savings on testing and repairing meters.

He described the various types of meters best adapted for outdoor locations and outlined methods of protecting the meters from the weather and from tampering. Some of the outdoor meters have glass tops which prevent drilling of holes into the top of the meter box and other tampering. Meters are located so as to reduce hazards to drops. He said that it is impossible to dispose of old meters all at once but that the older types are being replaced with newer meters when repairs and maintenance cost become too high.

F. L. Glasgow, Oklahoma Gas and Electric Co., led discussion on the meter move-out program. He said that this method enables the electric company to place old meters on lighter loads, as this can be done with less trouble while changes are being made. In making checks, Mr. Glasgow said, his company had found definite gains in revenues due to reduced current diversion when meters had been moved out doors where they can be more easily inspected. Customer satisfaction with outdoor meters is proven by frequent requests from customers for such moves, the speaker said.

John Shawver, Oklahoma Gas and Electric Co., Oklahoma City, who has attracted some attention by putting on a successful course of foremen training in his company, told of the results of this school. Foremen were assembled in classes for several weeks last winter and spring and exchanged views and were given instruction on about 20 subjects, most of which are related intimately to the foreman's duties. In larger utilities, the speaker said, the president and other head officials are likely to lose their personal touch with employees. But the foreman, who usually is in charge of from 10 to 15 men, has close personal contact with these employees and also with other people.

Mr. Shawver declared that the foreman should possess other qualification than merely being a good lineman or mechanic. He should have qualities of leadership, ability to please and get along with his employees and others, and should be a good business manager. He should be able to instruct and inspire his men to do their best work.

Discussion of the subject was led by G. B. Dunlap, Southwestern Light and Power Co., Chickasha. He referred to foremen training courses his company conducted in 1930 which now have been merged into the regular educational courses of the utility. These courses not only included foremen but also engineers, local and division superintendents.

Principal duties of a foreman, Mr. Dunlap said, fall into three general classifications. These are: supervisory, managerial and instructional. The foreman must have the ability to make the right selection of men, must show a real

(*Continued on page* 20)

Left to right, F. S. Thomas, A. E. Warner, J. A. Federman, and T. E. Graham, all Oklahoma Gas and Electric Co., Oklahoma, City.

Southeastern Utility Executives Attend Sales Conference

CHARACTERIZED as a down to facts "working" meeting by all who attended, the general sales conference of the Sales Section, Southeastern Electric Exchange, in Atlanta on November 14, 15 and 16, featured some sixty-four papers, covering practically every phase of selling from the viewpoint of the electrical utility industry.

Two general sessions for the entire conference were held, over which R. B. Roberts, general sales manager, Florida Power & Light Company, and chairman of the Sales Section, presided. During other periods of the conference, meetings of individual committees of the Sales Section were conducted, these including the residential load building, commercial load building, industrial power, rural electrification, and sales promotion and advertising committees.

A special feature of the conference was a joint meeting of the Sales Section and the Georgia Chapter, Illuminating Engineering Society. On this occasion, which included dinner and entertainment, O. M. Jackson, sales promotion manager, Georgia Power Company, served as toastmaster. He introduced I. H. Stockel, Benjamin Electric Mfg. Company, and chairman of the Georgia Chapter, I.E.S., who in turn presented Roy A. Palmer, of Duke Power Co., and newly elected vice president of the I.E.S. for the Southeastern District. The featured speaker of the joint meeting was S. G. Hibben, director of applied lighting, Westinghouse Lamp Company, who spoke on the subject "Where Is Light Going?"

Rex I. Brown, president, Mississippi Power & Light Co., opened the Thursday morning session, speaking on "The Public Utility Industry and National Defense." The supply of electricity to industry to meet the demands of the national defense program is a big job but one that the privately owned and operated electric utility industry is not only willing to undertake, but a job for which it is already fully prepared, Mr. Brown told the group.

Utility Industry Prepared

"It is interesting to compare the capacity of the electric utility systems at the time when we entered the last World War and the present day," said Mr. Brown. "In 1917, the electric generating capacity serving the nation was less than one-fourth of what it is today. In the 23 years since 1917, the population of the nation has increased 28 per cent, while the installed generating capacity of the privately owned electric industry has risen over 300 per cent. This rate of increase is more than ten times faster than the population increase, and this rapidity of growth must be credited to private enterprise, because today more than 90 per cent of the installed steam and hydroelectric generating capacity of the nation is privately owned."

Another important fact revealed in Mr. Brown's address showed that the excess of reserve installed capacity over the peak loads in the industrial areas of the nation averages well over 40 per cent, thus making available in existing electric power plants and facilities a great reservoir of unused power capacity that can be immediately put to work in industries engaged in producing equipment and materials for national defense.

"The Contribution of Utility Sales to National Defense" was the subject of an address by C. A. Collier, vice president, Georgia Power Company. Sustained sales effort, even in the face of what many call a seller's market during the next few years, will be a paramount need of the electrical industry, Mr. Collier said. Lack of aggressive salesmanship during this period would result in the loss of one of the biggest assets this industry has—the consuming desire to advance this business and to make it more use-

Nearly two hundred and fifty members and guests were in attendance at the general sales conference of the Southeastern Electric Exchange in Atlanta, November 14-16. Left to right, Curtis W. Lehner, district merchandising manager, Westinghouse Electric Supply Co., Atlanta; Fay Pearce, division sales manager, Georgia Power Co., Atlanta; O. M. Jackson, sales pomotion manager, Georgia Power Co., Atlanta; Rex I. Brown, president, Mississippi Power & Light Co., Jackson; Thomas Fuller, southeastern district manager, Westinghouse Electric & Mfg. Co., Atlanta; Ashton B. Collins, originator of "Reddy Kilowatt," Birmingham; F. J. Gannon, vice president, Tampa Electric Co., Tampa; and Otis O. Rea, central station manager, Westinghouse Electric & Mfg. Co., Atlanta.

Left to right, Roy A. Palmer, merchandise manager, Duke Power Co., Charlotte; S. G. Hibben, director of applied lighting, Westinghouse Electric & Mfg. Co., Bloomfield, N. J.; W. H. Thompson, director utility sales, Westinghouse Electric & Mfg. Co., Mansfield, Ohio; R. B. Roberts, general sales manager, Florida Power & Light Co., and chairman of Sales Section, Southeastern Electric Exchange; E. N. Pope, director of advertising and sales promotion, Carolina Power & Light Co., Raleigh; J. M. Robertson, advertising manager, Florida Power Corp., St. Petersburg; and J. H. Keele, residential sales manager, Florida Power & Light Co., Miami.

ful, more acceptable, more desirable, and more necessary to every man and woman that is served from the lines of the industry.

"In another three or four years," Mr. Collier continued, "there are going to be tremendous demands made upon the utility business for plant expansion which will require considerable new money going into the business. And this money can be obtained only if the owners can be assured that it is going to pay its way over the life of the equipment that the capital has been used to purchase. The problem of the salespeople of this industry is to insure that there will be a constant market for the products that we are able to produce after the "war baby" industries have closed up. We must continue our aggressive attitude, our desire for business, and our effort to get business, right on through the period of the emergency. Not only will we thus assure our company's future and our own future, but at the same time we will be rendering the most valuable and essential service to our country in a time of tremendous stress."

Selective Selling Stressed

The last speaker presented at the Thursday morning conference was Charles A. Eastman, of Ebasco Services, Inc., New York City, whose subject was "Coordinating Sales Efforts and Results with Net Return." He recommended more selective selling in the year ahead when the cash positions of most companies will make it necessary to evaluate all new business efforts in terms of effect upon net revenues.

The entire conference gathered Friday at noon for a luncheon meeting which featured an address by Albert W. Higgins, president, Florida Power Corp., and president of the Southeastern Electric Exchange. Two nationally recognized authorities on selling participated in the program for this session.

Speaking on the subject, "The Job of the Salesman is to Sell," H. S. Bigelow, Sales Analysis Institute, New York, discussed the value of sales training. "A great many people have the opinion that training itself is a tool," Mr. Bigelow said. "And when they say the word tool they have in mind a mechanical tool—hammer, wrench, screwdriver or something of that kind; and so they say a tool for the purpose of making sales. But when you talk about a mechanical tool, you have something that is applied directly to the work being done. A hammer is used to hit the nail directly, and the results of the dis-

Members of the Public Utilities Advertising Association in attendance at the meetings of the advertising and sales promotion committee of the Southeastern Electric Exchange. Left to right, front row, E. K. Hartzell, East Tenn. Light & Power Co., Bristol; E. N. Pope, Carolina Power & Light Co., Raleigh; and Ashton B. Collins, originator of "Reddy Kilowatt," Birmingham. Back row, C. N. Kilian, Alabama Power Co., B. G. Duncan, Florida Public Service Co., Orlando; J. M. Robertson, Florida Power Corp., St. Petersburg; and Roy Knox, Birmingham Electric Co., Birmingham.

tance that the nail goes in are measurable. So, a great many times we buy training because we believe it is something which can be applied directly to the head of the prospect or to the mind of the prospect, and that we should immediately get measurable results from that application.

"That is far from the truth. Training is a machine tool; it is something by which to make tools. The salesman himself is the mechanical tool; training is the machine tool . . . If you will use training as a means of developing the actual selling tool, the salesman, you will get consistent, effective sales performance."

Better Advertising Need

Concern over the fact that this industry is getting a smaller percentage of the consumer spending dollar than it did ten years ago was expressed by C. M. Snyder, assistant manager, Appliance and Merchandise Dept., General Electric Co., Bridgeport, Conn., in an address entitled "What Have We To Sell?"

"I am convinced that the success of other industries lies in the better use of their advertising dollar—the better understanding of human nature exemplified in their promotional appeals," said Mr. Snyder. "Any review of our current advertising and promotion quickly demonstrates the emphasis we are placing currently on only initial cost or price and competitive features . . . We have permitted the public to forget the contributions and blessing of electricity in its effect on living.

"The emotional appeals always have been available to our industry. I believe they should be dusted off and used more vigorously, if we are to reverse the trend of the consumer purchasing dollar back to our goods and services."

Mr. Snyder concluded with a plea that a greater proportion of the promotional dollar be spent in rededicating these four philosophies in advertising:

(1) That the beauty, youth and charm of American Womanhood is more dependent upon the use of electrical services than upon tons of beauty treatments;

(2) That electrical health, time and labor-saving devices pay for themselves to a degree not inherent in any other consumer purchase;

(3) That the drama of the great electrical power business—the public utilities story—be told and retold until the public's sympathetic understanding is won; and

(4) That the American Way of Life—the best way of life—has been brought about more by the growth and use of electricity more than through any other agency or factor involved in modern living.

The Saturday morning session, like Thursday morning's, was a conference for the entire Sales Section, and featured four addresses on subjects of general interest to all sales executives.

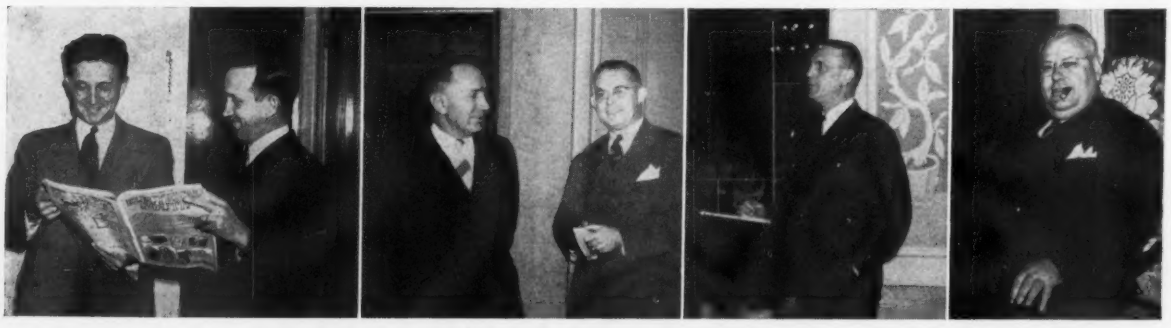
The "all-service selling" plan of the Florida Power & Light Co. was described in considerable detail by J. H. Keele, residential sales manager, Florida Power & Light Co., Miami. He described the sales organization, the job analysis outlines for all positions in the organization, the annual objectives of the plan, the dealer sales development plans, and the results obtained in typical campaigns.

Of particular interest were the advantages which he credited to this selling plan. Among those he discussed were: (1) Leads members of sales department to think in terms of added actual revenues; (2) more nearly approaches the sales service needed by customers; (3) more sales per call by salesmen; (4) more active prospects found and turned over to dealers; (5) sales employees are more capable of selling company's product, electric service, and dealers more capable of selling their products, appliances; and (6) permits the setting of individual objectives in terms of actual revenues and the directing of all sales members to do the basic sales job of selling the value of the company and creatively selling increased use of its own product, cheap and dependable electric service, rather than appliances.

"Future load building programs should be directed mainly at the small-use customer, placing primary emphasis on better lighting and light conditioning," Clyde Farnsworth, general sales manager, East Tenn. Light & Power Co., Bristol, told the conference in his address on the trend of domestic electric consumption and rates. "Small appliances should be pushed with the small customer and then, possibly, refrigeration. Cooking and water heating, of course, should be pushed wherever economically possible.

Sell to Small-Use Customer

"The immediate prospects for the utility industry are none too bright. It will be faced with a period of profitless prosperity. Demands will be made on plant capacity for defense requirements. It is going to be necessary to run a lot faster to barely keep even, to say nothing about getting ahead. Building up the small-use customer requires no added capacity," Mr. Farnsworth concluded, "or investment, very little increase in operating expense,



Left to right, T. B. Willard, Edison General Electric Appliance Co., Charlotte, N. C.; Paul T. Tysinger, illuminating engineer, Duke Power Co., Charlotte; R. H. Geidd, new business manager, Florida Power Corp., St. Petersburg; H. K. Dewees, southeastern district manager, Edison General Electric Appliance Co., Atlanta; H. S. Bigelow, Sales Analysis Institute, New York City; and E. Ensor, merchandise manager, Gulf Power Co., Pensacola, Fla.

Left to right, C. M. Snyder, assistant manager, Appliance and Merchandise Dept., General Electric Co., Bridgeport; C. A. Eastman, Ebasco Services, Inc., New York City; W. B. Shenk, commercial engineer, Virginia Public Service Co., Charlottesville; and W. A. Tadlock, commercial sales specialist, Georgia Power Co., Atlanta.

and increased revenues find their way almost entirely to the net profit column. The small-use customer offers a real opportunity for intensive sales effort."

A comprehensive discussion of the advantages of frozen foods to the farmer and the utility was presented at the concluding session by H. W. Sterling, superintendent of plants, Eastern Shore Public Service Company, Salisbury, Md. He cited the principal advantages to the farmer as being (1) greater acreage, (2) more stable market, and (3) possibility of marketing a greater variety of crops.

Mr. Sterling expressed his conviction that it is more economical to provide facilities for frozen food storage right at the home or on the farm than by means of community locker plants, commercial cold storage plants, etc. He described a type of refrigerated locker that could be assembled from materials costing only $200, which would provide 45 cubic feet of storage space and require only about 700 kilowatt-hours per year to operate it.

"The present and future possibilities of this industry are worthy of our full cooperation," Mr. Sterling told the conference, "for when you provide the farmer with facilities that will allow him to feed his family at lower cost the essential health-giving foods, you have rendered a real service and made profitable the further extension of rural lines."

"Our most important responsibilities today are those which have to do with employee relations and public relations," said J. M. Stafford, Jr., assistant advertising manager, of Georgia Power Co., in an address entitled, "There's a Man in Our Town." Good customer relations can be obtained only through good employee relations, he said, and both flow most surely when interpreted in terms of individual employees dealing with individual customers.

Speaking on the prospects for the future, Mr. Stafford said "Our primary problem very likely will be that which involves the maintenance of good and adequate customer and public relations. And, at least to some extent, whatever any of our companies have been doing heretofore along these lines will have to be improved and intensified. From top to bottom, in sales, operating, engineering, accounting, and all other departments, there must be a re-evaluation, a re-appreciation, of every aspect of public relations as they are affected by the actions of each individual employee."

The real working sessions of the conference were the individual committee meetings. Judged from the scope of the papers presented at these sessions and the interest exhibited by those in attendance, the conference was one of the most successful ever sponsored by the Sales Section. L. M. Taylor, chairman, and J. S. Sutherland, vice chairman, presided over the sessions of the residential load building committee. Among those who presented discussions at this meeting were M. B. David, director light conditioning sales service, New York City, who spoke on "Light Conditioning Dealer Program." Other speakers and their subjects were: "The Necessity of

Left to right, E. H. Ginn, commercial vice president, General Electric Co., Atlanta; C. A. Collier, vice president, Georgia Power Co., Atlanta; and W. T. Christy, manager, General Electric Florida distributorship; Mr. Collier, as he addressed the conference; E. K. Hartzell, assistant to president, East Tenn. Light & Power Co., Bristol; and G. E. Durben, Frigidaire Division, General Motors Sales Corp., Dayton, Ohio.

Coordination of Distributors, Manufacturers, and Utilities in Developing Adequate Dealers," by J. S. Sutherland, sales promotion manager, Alabama Power Company; "Planned Selective Selling for Profitable Revenue in the Low Use Market," by O. N. Fussell, residential sales manager, Louisiana Power and Light Company; "Methods in Home Service Operations," by Miss Fern Snider, home service director, Georgia Power Company; and "Effective Sales Training Methods," by J. R. Guidroz, residential sales manager, New Orleans Public Service, Inc.

One of the featured addresses of the commercial load building committee, over which W. B. Shenk and A. C. Bergh presided, was an address by Roy A. Palmer, merchandising manager, Duke Power Company, on "The Fluorescent Lamp—A Sales Opportunity." Mr. Palmer's talk was followed by prepared discussions on various phases of fluorescent lighting by H. M. Horton, division lighting engineer, General Electric Company; Charles R. Long, district engineer, Westinghouse Lamp Company; Philip Peeples, manager lighting sales division, Georgia Power Company; T. B. Smiley, domestic sales manager, Carolina Power & Light Company, and Tom D. Hoskins, Louisiana Power & Light Company.

C. N. Rackliffe and P. D. Lawrence presided over the meetings of the industrial power committee. Particular interest centered about the discussion on the "National Defense Program," by Edwin M. Clapp, Georgia Power Company. The desirability of sales skits as a method of sales training and the use of written sales presentations were the subjects of talks by W. P. Lyman, Carolina Power & Light Company, and B. M. Davis, Mississippi Power & Light Company.

A wide range of topics relating to rural electrification were presented at the committee meetings presided over by L. M. Gray and J. T. Kimball.

E. N. Pope and J. M. Robertson presided over the sessions of the sales promotion and advertising committee. Discussions presented at these sessions included "Organization and Functions of a Utility Sales Promotion and Advertising Department," by Victor Roby, sales promotion and advertising department, Mississippi Power & Light Company; "Defense Program Policies," by E. K. Hartzell, assistant to president, East Tennessee Light & Power Company; "Press Relations," by J. G. Bariesas, advertising manager, Virginia Public Service Company; "Coordinating Load Building and Public Relations Promotions," by B. G. Duncan, advertising manager, Florida Public Service Company; "Dramatizing the Annual Sales Program," by J. P. Maguire, sales promotion manager, New Orleans Public Service, Inc.

Heard at the concluding sessions of the advertising committee were J. M. Robertson, advertising manager, Florida Power Corp., whose subject was "Use of Market Research in Measuring the Effectiveness of Sales Promotion and Advertising;" J. L. Landon, Jr., advertising manager, Eastern Shore Public Service Company, "Building Patronage for Our Industrial Customers;" C. M. Kilian, advertising manager, Alabama Power Company, "A New Dress for Mother Hubbard;" and Ashton B. Collins, originator of "Reddy Kilowatt," "Expanding the Utility Advertising Man's Horizon." A particularly interesting feature of the last session of this committee was a symposium on "Dealer Sales Development," presented by A. G. Morgan, Virginia Electric and Power Company; Robert C. Lowe, Jr., Georgia Power Company; and R. C. Paslay, Louisiana Power & Light Company.

Oklahoma Utilities Association Meets

(Continued from page 15)

interest in them, provide them with proper tools and equipment, inspire them to do a good standard job, and to take real pride in their accomplishments. The foreman should try to keep expenditures within such bounds that the company can at least make a little money on the investment.

"The time has come when every employee of our companies must aid in selling," declared B. E. Lowe, Southwestern Light and Power Co., in presenting the subject: "How to Sell Power." In these days the electric load does not just fall into the lap of the utility but it must be sold. In his company, 55 per cent of the kilowatt-hour sales and 49 per cent of the revenues are industrial and commercial power.

How to meet the keen competition of gas, oil and steam engine salesmen, who argue the cheapness of individual power units, is an ever present problem, Mr. Lowe stated. In recent years they have put out small high-speed engines which they have been placing in small business establishments. The claim that these engines, within a few years, will pay for themselves in savings as compared with monthly bills for electricity can easily be met, Mr. Lowe said. He then continued: "We electric light and power people need not be engineers to be able to meet the arguments of the salesmen of individual power units. We need only to familiarize ourselves with facts and figures available in every electric utility office and we will be able to talk convincingly about the advantages of purchased power."

Mr. Lowe said he has a list of 200 of these advantages and he named 33 of them. These included statements that electricity is power that is clean, always available, adequate, subject to downward trends in price, convenient, adaptable, having elements of known cost, eliminating overhead cost and fixed charges for investment in power equipment and enabling the employers to provide a cleaner, healthier and safer place in which to work.

On the program to discuss the same subject, Thomas E. Graham, Oklahoma Gas and Electric Co., Oklahoma City, named many additional advantages for purchased power. He stressed the point that it enables the industrial purchaser to adjust his power use and investment to fluctuations in his business, gives him a greater flexibility for expansion and makes it unnecessary for him to employ engineers or mechanics to keep power equipment in good order. The electric utility, which furnishes him central power, takes care of all this, relieving him of many worries.

Noonday luncheons were features of both meetings. The Western district luncheon was held in the New Chickasha hotel, at Chickasha. The Eastern district luncheon was in the Junior Ballroom, Mayo Hotel, Tulsa.

A. P. Burns, Duncan, who had served as district secretary for the past year, was elected western district chairman for the coming year. Ted Weidman, Oklahoma Gas and Electric Co., at Norman, was elected district secretary. Attendance at each of the district meetings was approximately 100, according to Kate A. Niblack, secretary, of the Oklahoma Utilities Association.

Underfloor Raceways Featured In Dallas Bank Wiring

WITH the addition of two floors and remodeling of the Federal Reserve Bank Building in Dallas, Texas, what is said to be one of the finest electrical jobs in the state was recently completed. Electrical work was in excess of $50,000, the electrical contractor being Republic Engineering Company, Dallas, owned by W. C. Walls.

As an example of the good lighting now prevailing in the building, there is a minimum of fifty foot candles of light over all the counters in tellers' cages on the first floor. Some 600 feet of fluorescent lighting was installed to serve these cages. Fluorescent lighting was also installed on the fourth floor, where there are a few similar cages.

An entirely new, decorative ceiling was installed on the main floor. Its beauty is brought out by excellently arranged floodlighting, six units being placed on top of the tellers' cages, hidden in urns.

Offices and library on the first floor are finished in solid mahogany, with wainscoting of solid mahogany in the library. Holophane fixtures were installed in the library, and the offices have heavy 1000-watt floodlights.

Lighting around the hallway on the first floor utilizes Curtis units No. 5062, with 300- to 1000-watt lamps.

The second to seventh floors all use Magnalux 300- to 500-watt solid bronze fixtures. From the third to seventh floors there is a light about every ten feet, one of the 300- to 500-watt Magnalux floods.

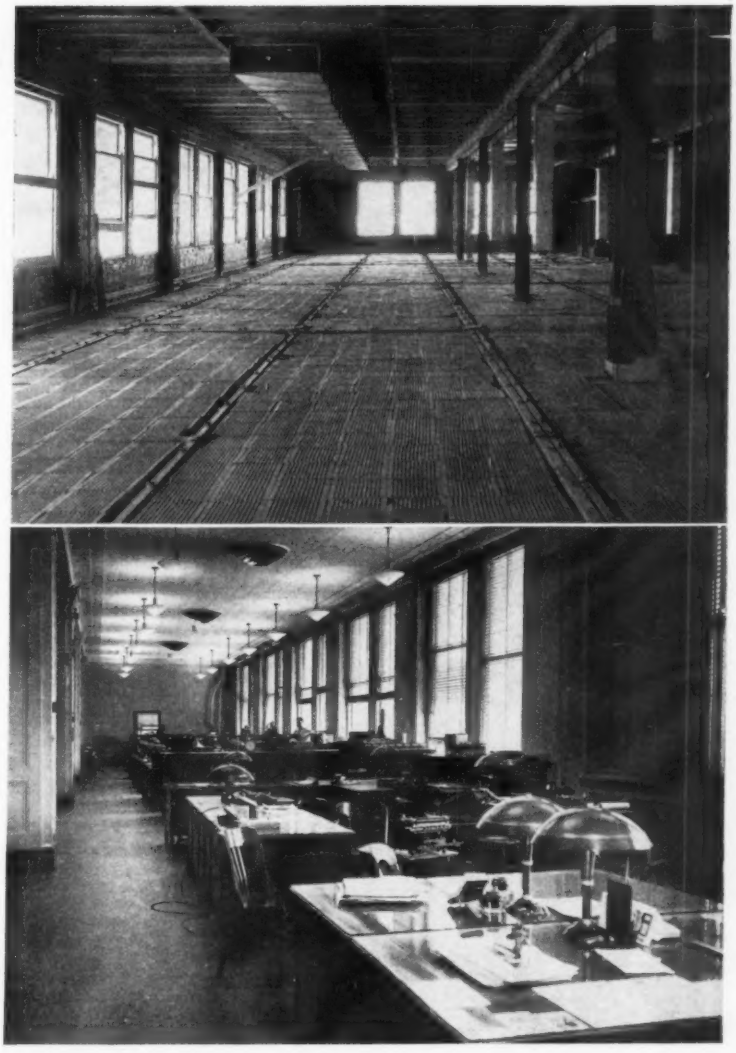
Some 10,000 feet of under-floor duct was installed, JC-106, federal specification wire being used.

The advantages of this type of construction are numerous. The underfloor duct provides outlets at every desk for desk lamps, electrical calculating and bookkeeping machines, etc.

The switchboard was enlarged, all new panels throughout having been installed and the old ones abandoned.

No. 8 wire was used on all lighting circuits, which will carry approximately 35 amperes. With this size wire there is very little voltage drop in the circuits, providing full voltage to all lamps. The building was also wired for Minneapolis-Honeywell regulator control which keeps a record of the temperature of each floor and each part of the floor. There are four units to a floor, recording the temperature every hour.

The building was completely wired for fire and burglar alarms. There are fire alarms on every floor.



One of the outstanding electrical installations completed recently in Texas was the two-floor addition, and general remodeling, for the Dallas Federal Reserve Bank Building. Nearly 10,000 feet of underfloor duct was used, the upper photograph showing part of the installation just before the concrete floor was poured. Below is a view of one of the general offices showing the high intensity illumination obtained from closely spaced fixtures. Republic Engineering Company, of Dallas, was the electrical contractor.

Successful Wiring Promotions Studied at Conference

THE case histories of five outstandingly successful plans for the promotion of adequate wiring were enthusiastically received by a group of approximately one hundred industry representatives who attended the First National Adequate Wiring Conference held November 12, at the Palmer House, Chicago, and jointly sponsored by the National Bureau and the International Association of Electrical Leagues.

Each of the five plans—the Minnesota, Chattanooga, Inland Empire, Wisconsin and West Penn—was selected as an example of a well-rounded program that is getting results and each was characterized by some special approach to the home wiring problem in a detailed analysis by the local industry leader directing the activity. All presentations were amplified by reference to charts and displays of special materials.

Rewiring promotions in the residential and commercial fields were a feature of the first morning session of the Fifth Annual Conference of the I.A.E.L. which began on November 13.

The wiring conference was opened with a brief address of welcome by O. C. Small, secretary of the National Bureau, who emphasized that the success of the four preceding regional conferences had definitely pointed to this national meeting which would undoubtedly be the first of many.

A. H. Kessler, promotion manager of the North Central Associated Electrical Industries, who was the conference chairman, then introduced the first speaker, W. A. Ritt, secretary-manager of the N.C.A.E.I.

In presenting the Minnesota plan, Mr. Ritt emphasized the fact that this more than statewide promotion was one centering around the electrical contractor as the key man. The organization of the activity, he said, was developed slowly and involved questions of a uniform standard suitable for a large geographical area, an effective direct mail campaign for the contractor and the procedure for rendering an effective inspection and certification service clearing through the headquarters office at Minneapolis.

"We had to begin with the idea of selecting the prospect first," Mr. Ritt declared. "And we have now found that half of the people are calling on the contractor after receiving the second letter in the campaign. Our next step will be to reach builders and architects more directly."

While the Minnesota program will certify about 60 homes up to 1941, Mr. Ritt emphasized that nearly 600 jobs have been materially increased. It has been definitely established that the public is interested in better wiring if it is informed.

A program characterized by intensified local industry effort was next described by C. B. Osborne, manager, Sales Department of the Chattanooga Electric Power Board, and past president of the Electric League of Chattanooga.

"A. W. is the No. 1 promotion," Mr. Osborne said. "If we get that road built down the middle, we can drive other sales activities along it."

The Chattanooga plan is one in which a closely cooperating local industry group effectively ties in wiring with other promotions. It has been successful in creating a large amount of newspaper publicity. The use of special signboards, floodlighting of houses, newspaper advertising, radio, etc., has also been developed and coordinated and several demonstration homes, promoted in cooperation with builders, have produced excellent results in lighting and appliance sales in addition to sales of certified wiring.

By November 12, the League had certified 109 homes, with 220 more nearly meeting the certification standard.

Another plan which has a special type of contractor tie-in was analyzed by Homer C. Bender, of the Washington Water Power Company and secretary of the Spokane A. W. Bureau. Through the operation of the program, certified adequate

Many questions were directed to this "Information Please" group at the First National Adequate Wiring Conference which was composed of the five speakers and Chairman Kessler. Shown here are Messrs. Ritt, Osborne, Kessler, Bender, Falke and Fife. The display in the background was used by Mr. Falke in his address.

wiring is big news in the Inland Empire where 46 electrical contractors and many builders, appliance dealers, banks and lumber dealers have joined forces in a remarkably effective plan of advertising and publicity. In a six months period, 26,000 lines of advertising were run and 22,000 lines of editorial copy. In all, 22 full newspaper pages have told the story of certified wiring in new homes in 19 communities throughout this wide area in Washington and Idaho.

Mr. Bender reported 120 certification jobs completed and a total of 267 A. W. plans prepared.

In the city of Spokane, wiring is being promoted in cooperation with the Spokane Better Housing Bureau which works on A. W. layouts as well as kitchen planning. Beginning next year, commercial rewiring promotion will be stressed there.

That adequate wiring has definite sales appeal for the public was brought out in a dramatic, illustrated talk given by L. A. Falk, supervisor, Dealer Cooperation, Wisconsin Power & Light Company. Mr. Falk, who has taken this unusual presentation of adequate wiring to scores of service clubs and consumer groups throughout the mid-west, addressed the conferees as if he was speaking before a local Rotary meeting. The story is simple. It gives the audience a new slant on the rapid increase in lighting and the use of electrical appliances in the home which have, in turn, produced the problem of inadequate wiring. The progress made by the industry in lowering costs of service and of lights and appliances is graphically shown with props ranging from a sack of coal to an illuminated home chart. Another chart gives losses in time and money (on a percentage basis) to the home-owner when a 10 per cent voltage drop exists.

The West Penn plan, which exemplifies a remarkably high degree of organization for an over-all promotion on certified wiring, was analyzed by C. M. Fife, manager, Electrical Home Bureau, West Penn Power Company.

"Our company promotes adequate wiring," said Mr. Fife, "because adequacy makes it easy for the customer to buy all the electric service he wants. While not a direct load-builder, A. W. leads to greater use and, conversely, inadequacy of wiring retards the sale of electrical equipment and of consumption."

"Well, what do you think of that model, Mr. Wittleby?"

The West Penn setup and method of operation was described in detail as it is being operated in a territory covering 8,700 square miles and including 206,000 residential customers.

Mr. Fife's presentation referred to the operation of the Electric Home Bureau, an elaborate field setup divided into 6 Divisions and 35 Districts, a comprehensive training program for all employees, preparation of layouts, applications, inspection and certification of certified homes (under Red Seal), identifying job posters for contractors, talks and films on wiring, A. W. demonstrators, customer literature, direct mail, advertising and publicity, district office window displays, billboards, playlets, displays at home shows and the use of demonstration home promotions.

Red Seal certifications under this program have increased from a total of 44 in 1929 to 444 in 1937, 1090 in 1939 and an estimated 1400 for this year.

The wiring conference was concluded with an open forum during which questions were directed to the various speakers.

"An Effective Approach to the Residential Rewiring Problem" was the subject of a paper read at the next morning's session by John B. Watkins, assistant to manager, Lighting and Wiring Sales, Commonwealth Edison Company. This program, Mr. Watkins said, is based on the sale of additional convenience outlets, availability of deferred payment terms, subletting of all work to electrical contractors and a coordinated refixturing activity. Studies have determined that the average increase in consumption per outlet is approximately 35 kilowatt hours per annum, with the increase probably coming from new lamps and appliances purchased.

Emphasizing that they had nothing to sell but an idea and that the promotion was therefore entirely non-commercial, G. W. Barker, manager of the Northern California Electrical Bureau, gave a detailed resume of the San Francisco office building rewiring activity which, in 15 months, resulted in $448,700 worth of *plus* business for the electrical industry. Additional jobs pending total about $154,000.

Mr. Barker's talk, which was illustrated by slides, developed the point that adequate lighting provided the medium of approach. The problem of inadequate lighting is common to all buildings and is understood by all building managers.

The most succesful selling slants developed were that adequate wiring helps the building owner and manager by (1) holding tenants, (2) making it easier to lease space, (3) increasing occupancy of the building, and (4) allowing the owner to meet competition.

Branch Circuit Requirements Changed in 1940 Code

By B. Z. Segall

New Orleans Public Service, Inc.
New Orleans, Louisiana

MANY changes have been made in Article 210 of the 1940 Code. The "Scope" in Section 2101 has been broadened to include "one or more lighting or appliance outlets, or combination of such outlets." Furthermore, since the provisions of the sections outlining the requirements for the various types of branch circuits augment or modify the general requirements, the 1940 Code states that these branch circuits must "Conform to the provisions of Section 2102 to 2175 inclusive," instead of only 2102 to 2114 as stated in the 1937 edition. The most important change of intent, of course, is recognition of a branch circuit supplying only one outlet for lighting or appliance loads.

Section 2103 "motors" has been entirely reworded to emphasize the fact that all motors connected to the branch circuits described in this article must comply with "the provisions of this article and Article 430" and "both shall apply."

The requirements of Section 2104 have been clarified to a considerable extent. The opening definition establishes the meaning of the multi-wire branch circuit as any wiring combination having the following characteristics: (a) two or more unidentified conductors having a potential difference between them and (b) one neutral or identified conductor having equal potential difference between this conductor and each of the above mentioned ungrounded conductors.

New Color-Code Rules

Two-wire circuits as such are not to be considered as multi-wired branches and seemingly do not have to be color coded even if derived from multi-wired feeders. In the last sentence in the sub-section entitled "Color-Code," we find the statement that "all circuit conductors of the same color shall be connected to the same ungrounded feeder conductor throughout the installation."

The color coding applies to all wiring systems except those employing bare conductor feeders. The color coding follows the general plan outlined in the 1937 Edition except that the blue and yellow are interchanged. The yellow, therefore, is not required until a 5-wire branch circuit is installed. The 1940 Code definitely recommends the use of other colors, where more than one multi-wire circuit is carried through a single raceway. It will be remembered that in the previous discussion of this article this was recommended as a good engineering practice. However, it is again pointed out that rather than use different colors it may be best to standarize on a Code using the colors stated, in combination with another color or tracer. Thus one circuit would utilize solid black, white, red, and blue colors and the second circuit would show black and white, red and white, and blue and white for its colored insulating covering.

Section 2105—Voltage has been extensively revised. The Code when issued will most probably show other revisions to this Section. The following discussion is based entirely on the preprint copy and may be slightly at variance with the official final copy. The final copy may re-edit this section to more clearly convey the following points:

(1) In dwellings the wire terminals of receptacles or lamp holders for Edison base type lamps should not be subject to potential exceeding 150 volts.

(2) To permit 220 volt circuits and convenience outlets in dwellings for supplying appliances rated above 1650 watts, and

(3) To recognize such 220 volt circuits for dwellings where certain types of lamp loads are desirable. (Fluorescent lighting at 220 volts may be more desirable than 110 volt equipment)

Old Sections 2107 and 2108 have been interchanged in the 1940 Code. Also old Section 2109 has been partially included in the revised Section 2107 and in a new Section 2109. Section 2107 in the 1940 Code entitled "Determination of circuits" includes the identical first sentence found in Section 2108 of the 1937 Edition. The second sentence of the 1940 Code for this section, includes the first sentence of old 2109. The new Code, however, makes it mandatory to divide the total load evenly among the branch circuits. The final sentence restates the old 80% derating requirement for continuous loads in very much the same manner as it was outlined in the 1937 Code. The 1940 Code contains a cross-reference to the new example in Chapter 10 illustrating the application of this derating factor.

Calculation of Loads

The "Calculation of Load" shown in the new Section 2108 is a complete revision of both the intent of application and material. In the 1937 Code this section applied specifically to the method of determining the total number of branch circuits for any particular occupancy. The 1940 revision is much broader in its application in that the load calculations as now set up are the basic figures for all the other calculations for determining feeder sizes and service data.

Primarily, as in the case of the 1937 Code all calculations are based on the square foot area of the building involved. The extent and method of determining this area is explained in the first paragraph of Section 2108. This is essentially the same material to be found in the 1937 Code. Whereas in the 1937 Edition, the calculations were developed on the basis of occupancy, the 1940 revision bases its calculations on the type of loads within these occupancies.

A table showing the minimum wattage per square foot area for the general lighting load of various types of buildings is shown in the "a" paragraph of this section. It should be noted that this table now applies not only to dwelling occupancies as in the 1937 Code but to other types of

buildings as well. This will definitely clarify the method of determining minimum lighting facilities for these other types of premises.

In addition, a supplementary table sets up minimum values for the lighting of hallways, storage spaces, etc. in office buildings, hotels and similar occupancies. For those buildings which are not listed in the table, such as warehouses, garages, etc., the old method of assigning a minimum rating of 5 amperes, for each heavy duty lampholder and 1½ amperes for all other outlets still applies. It will be noted that the fine print note recommending a 15 ampere branch circuit for each 500 square feet of dwelling area is again used in the 1940 revision. This recommendation is intended not only for strictly residential occupancies, but for the dwelling portions of apartments, clubs, and hotels.

Alternate Calculations

In new Section 2108al, the alternative method of calculating loads is presented. This applies only to single family dwelling having a total floor area of 500 square feet or less. The 1940 Code, however, is more specific in the application of the method outlined in Section 2108d referred to in the preceding paragraph to load calculations in these small dwellings, by stating, that this method is to be applied in determining the lighting load only.

New Section 2108b now sets forth very prominently a requirement which was quite often over-looked in load calculations. Previously, the calculations for show window lighting applied only for the determination of the feeder load and service conductors for stores. Now it becomes definitely a part of the branch circuit calculation. This is a forward step in Code making as it finally recognizes one of the short comings in providing adequate facilities for show windows. Many of these facilities have been rendered practically useless because of inadequate branch circuit wiring.

The calculations for the branch circuits supplying small appliances has been changed to some extent. The additional load of 1500 watts has to be provided for as outlined in the 1937 Edition. However, in the case of small single family homes having a floor area of 1000 square feet or less, this additional load may be decreased to 1000 watts. This general rule applies only to dwelling occupancies. For other types of buildings, the branch circuit for these appliances must be rated on the capacity of the appliance itself or as otherwise provided in Section 2108d.

While Section 2108d assigns a minimum rating to the various types of outlets, there are certain types of continuous outlet strips, such as Bull Dog "Trolly-duct," National Electric Products "Plug-in Strip," and Wiremold "Plug Mold," which cannot be readily classified. In paragraph "e" of Section 2108 these are listed as exceptions to the rating requirements of the preceding paragraph "d". For the multi-outlet assemblies, the rule is stated in much the same manner as it was outlined in the 1937 Code. However, the 1940 revision, in addition, assigns a definite minimum value of 1½ amperes to each length or fraction thereof. The requirements for the continuous outlet strip or busway designed for load connections at any point of the busway are entirely new material.

The final part of Section 2108 deals with additions to existing installations. The material is a complete revision of old Section 2107c. In the 1940 Code, Section 2108fl states the rules for additions to circuits in dwelling occupancies. In the 1937 Code all new circuits added to the existing wiring could be completed on the basis of the wattage per square foot area involved, or on the assignment of a minimum amperage to each outlet on the new circuit. The 1937 Code, however, stated that extensions to exsisting branch circuits could be made by the method of amperage assignment to each additional outlet. The 1940 Code does not make any such distinction between new circuits or extensions and permits both methods of computation for both conditions. In the 1940 revision, however, if unwired portion of existing buildings, or additions to the building structure, exceed 500 square feet in area, then all calculations must be made on the basis of wattage per square foot area outlined in paragraph "a" of this Section 2108.

In the case of other than dwelling occupancies, all new circuits or extensions can be made by either of the two methods. This rule is now to found in the new Section 2108f2.

Before reviewing the balance of the changes in this article, it should be remembered that all values are minimums. Under all conditions, actual values hold precedent over these minimum code conditions. Thus, if a plan definitely shows a 1000-watt lamp to be installed on a heavy duty outlet (Mogul base) then the minimum amperage assignment for the outlet should be 10 amperes and not 5 as shown by Section 2108d.

The same holds true for the minimum show window lighting load. If it is known, for example that 500 watt lamps are to be installed on one foot centers, then a minimum of 5 amperes should be used in calculating the branch circuits and not 2 amperes as provided by Section 2108b. It should also be kept in mind that many of these larger lighting units provide for larger wattage lamps. Thus a 500 watt unit, may very easily take a 750 watt lamp and under these conditions many code enforcing authorities may require wiring for these larger units.

In the 1940 Code, Section 2109 is an augmented mandatory requirement based on the fine print recommendations of Section 2109 of the old Code. Formerly it was recommended that the branch circuit supplying kitchen, dining room and laundry outlets, be isolated from other outlets in the dwelling. The 1940 revision states this now as a mandatory requirement and, in addition, includes all laundry and breakfast room outlets.

No. 12 Minimum Conductor

Furthermore, the branch circuit wiring is limited to a minimum size of No. 12 conductors. The branch circuit itself may, of course, still be rated at 15 amperes but the minimum wire size must be No. 12. This will accomplish two desirable objections: it will increase the number of circuits in these sections of the dwelling and will result in a more efficient wiring system in that voltage drop will be a minimum. Flickering lights will thus be eliminated and the operation of toasters, etc. will be greatly improved.

Section 2110 still outlines the requirements for receptacle outlets. It has been entirely re-edited and in its present form should eliminate all misinterpretations. No change of intent or application is involved. The rules are more simply stated, more concise and much more ex-

(*Continued on page* 28)

Motor Branch Circuit Design

Requirements of the 1940 National Electrical Code for motor branch circuits analyzed by study of typical installations.

By J. M. Flanigen

Asst. Supt. Retail Operations
Georgia Power Company

This article was adapted from a paper presented before the recent annual meeting of the Southern Section, I.A.E.I., in Houston, Texas. All references are to the 1940 edition of the National Electrical Code. For convenience, tables appearing in the Code are designated by Arabic numerals just as they appear in the Code. Tables having Roman numerals are those appearing with this article.

THE DESIGN of motor branch circuits is affected to a considerable extent by changes appearing in the 1940 edition of the National Electrical Code. To emphasize the factors that enter into the design of motor circuits a typical installation will be discussed in the following paragraphs, the general layout being as shown in Figure 1.

Let us consider first the fractional horsepower motors connected to Circuits No. 1 and No. 2 of the wiring diagram.

These motors have been chosen to bring out the different methods of handling fractional hp motors, the main difference being in the protection and control of the automatic start and manual start motors. The automatic start motor must have running over-current protection for each motor. This may be inbuilt as in motor B or separately mounted as in motors A and C.

In laying out these circuits, I have not attempted to consider distance or voltage drop. I have assumed that the physical layout would permit grouping motors A, B and C on one circuit and motors D, E and F on another.

In order to design the best layout, it is desirable to figure individual circuits, then group the motors and determine the most economical layout. Therefore, I have

Table I—Data on Fractional-Hp Motors Connected to Circuits No. 1 and No. 2

Individual Branch Circuits, 230-Volt Single Phase

Motor	Type	Size	Code Letter	Current Rating	Starting Current	Table 20, N.E.C Min. Cond. Size	Run Protect. Fuse	Branch Ckt. Fuse	Tables 26 & 27 Max. Branch Ckt.
A	Automatic	¼	—	2.4	11.5	14	4	15	9.6
B	Automatic Cyclic	½	G	3.5	14.	14	6	15	14.0
C	Automatic	¾	—	4.7	45.	14	8	15	18.8
D	Manual	¼	—	2.4	20	14	4	15	9.6
E	Manual	½	—	3.5	35	14	6	15	14.0
F	Manual	¾	K	4.7	30.5	14	8	15	18.8

Motors A, B & C on One 230-Volt Single Phase Circuit

	4343 (a)*			4314	4343 (b)		4314	4343 (b)	
	Min. Cond. Size	Run Protect Fuse	Branch Ckt. Fuse	Min. Cond. Size	Run Protect Device	Branch Ckt. Fuse	Min. Cond. Size	Run Protect Fuse	Branch Ckt. Fuse
A	10	3.4	25	14	3.4	20.0	10	3.4	30.
B	10	None	25	14	None	20.0	10	None	30.
C	10	6.6	25	14	6.6	20.0	10	6.6	30.

Motors D, E & F on One 230-Volt Single Phase Circuit

D	10	None	25	14	3.4	20.0	10	3.4	30.
E	10	None	25	14	5.9	20.0	10	5.9	30.
F	10	None	25	14	6.6	20.0	10	6.6	30.

All Six Motors on One 230-Volt Single Phase Circuit

* If lamps or other appliances are on the circuit these may be on a 25 amp. branch circuit, otherwise branch circuit fuse must not exceed 10 amps. at 250 volts. Motor "C" would blow 10 amp. fuse in .2 second, 20 amp. fuse in 2 seconds, and 25 amp. fuse in 10 seconds. Also, sum of full-load currents is 10.6 amps. for three motors and 21.2 for six motors.

shown in Table I, first, the data from Table 20 (page 316, 1940 N. E. C.) for individual circuits and, second, the grouping of motors A, B and C on one cirucit and motors D, E and F on another circuit, and also all motors on one circuit.

From Section 4314, (All references are to 1940 N. E. C) we determine the wire size by taking 125% of the rated current of the highest rated motor and add to this the full load currents of each of the other motors. This works out to be No. 14, Type R.

From Section 4343, we determine the branch circuit protection, and here we find three methods of figuring this protection:

(1) Motors having a full load of current less than 6 amp. each may be placed on a circuit protected by a 10 amp. fuse (230 volt circuit). This is impracticable in this case for the sum of the full load currents is 10.6 amp. and motor C itself would blow this fuse in starting.

(2) The second method, shown in Table I as (a), permits these motors to be placed on a regular 15, 20 or 25 amp. branch circuit with other appliances or lights.

(3) From Section 4343, paragraph (b), we find that by providing individual protection for each motor, we can group them on a circuit. The branch circuit overcurrent protection is figured by applying Tables 26 and 27 to the highest rated motor and adding the full load currents of each of the other motors. This works out to be a 20 amp. fuse.

The 20 amp. fuse might blow before motor C comes up to speed as it would take about two seconds to blow an ordinary 20 amp. fuse at this load. By applying the exception to Table 27 (section 4342) we could use a 25 amp. fuse and overcome this difficulty.

In like manner all six motors may be grouped on one circuit, but in this case the method of paragraph (a) cannot be used as paragraph 2145c limits the connected load to 20 amp. Paragraph (b) requires a No. 10 conductor and a 30 amp. fuse. Here again we might have trouble with motor C

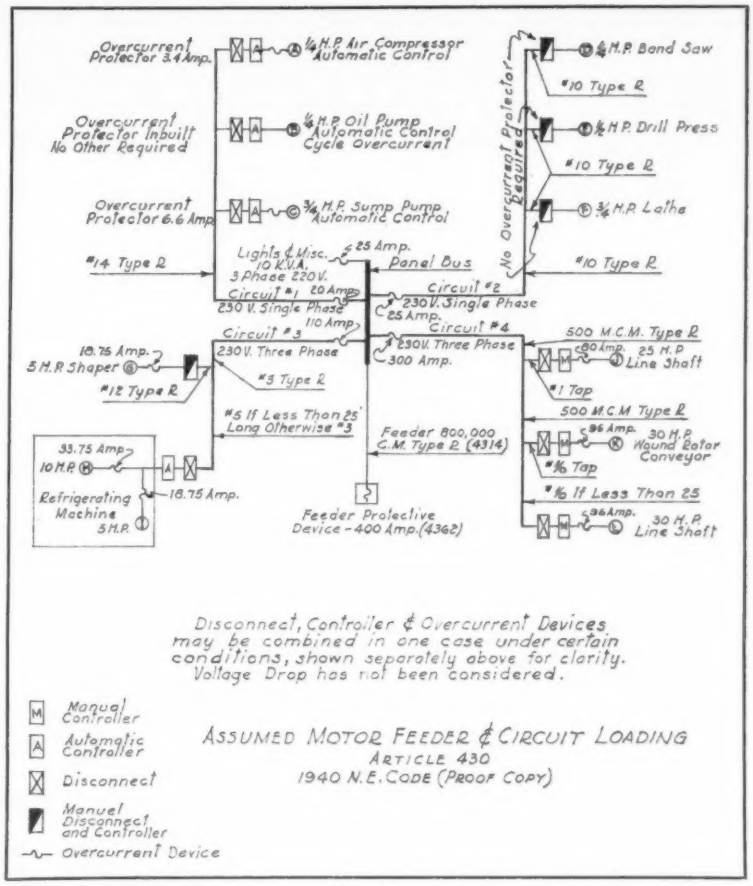

Overcurrent Protector 3.4 Amp.
¼ H.P. Air Compressor Automatic Control
Overcurrent Protector Inbuilt No Other Required
½ H.P. Oil Pump Automatic Control Cycle Overcurrent
Overcurrent Protector 6.6 Amp.
¾ H.P. Sump Pump Automatic Control
#14 Type R
Lights & Misc. 10 K.V.A. 3 Phase 220 V.
25 Amp.
Panel Bus
Circuit #1 20 Amp. 230 V. Single Phase
Circuit #2 230 V. Single Phase 25 Amp.
Circuit #3 110 Amp. 230 V. Three Phase
Circuit #4 230 V. Three Phase 300 Amp.
18.75 Amp. 5 H.P. Shaper
#12 Type R
#3 Type R
#6 If Less Than 25' Long Otherwise #3
33.75 Amp. 10 H.P. Refrigerating Machine 5 H.P.
18.75 Amp.
Feeder 800,000 C.M. Type R (4314)
Feeder Protective Device - 400 Amp. (4362)
No Overcurrent Protector Required
½ H.P. Band Saw
#10 Type R
½ H.P. Drill Press
#10 Type R
¾ H.P. Lathe
#10 Type R
500 M.C.M. Type R
80 Amp. 25 H.P. Line Shaft
#1 Tap
500 M.C.M. Type R
96 Amp. 30 H.P. Wound Rotor Conveyor
#1/0 Tap
#1/0 If Less Than 25
96 Amp. 30 H.P. Line Shaft
Disconnect, Controller & Overcurrent Devices may be combined in one case under certain conditions, shown separately above for clarity. Voltage Drop has not been considered.
Manual Controller
Automatic Controller
Disconnect
Manuel Disconnect and Controller
Overcurrent Device
ASSUMED MOTOR FEEDER & CIRCUIT LOADING
ARTICLE 430
1940 N.E. CODE (PROOF COPY)

Fig. 1. A typical motor installation is indicated here. In the accompanying article, this installation is studied as a means of demonstrating how requirements of the 1940 National Electrical Code affect the design of motor branch circuits.

Table II—Data on Across-the-Line Starting Motors of Circuit No. 3

(Motors are 3-phase, 230 volts.)

						Individual Circuits				One Circuit		
						Table 20			Tables 26 & 27	4314	4322	4343 (b)
Motor	Type(1)	Size	Code Letter	Current Rating	Starting Current	Min. Size Cond.	Running Protec.	Branch Ckt. Fuse	Branch Cir. Fuse	Min. Cond. Size	Run Protector	Branch
G	GP	5	G	15	82	12	20	45	45.0	No. 3(2)	18.75	111
H	GP	10	G	27	165	8	35	90	81.0	No. 3(2)	33.75	111
I	AS	5	D	15	54	12	20	45	37.5	No. 3(2)	21.00(3)	111

Note (1): GP = general purpose squirrel cage motor; AS = automatic start low current motor.

Note (2): Conductor Size: For the three motors on one circuit, a No. 3 conductor would be required. Motors G and I would require taps of No. 10 size.

Note (3): Motors H and I are part of an approved refrigeration unit and motor I could have overcurrent protection of 140% full-load current. However, in this case, there is no particular advantage in using this higher rating. Therefore we have used 18.75 amps.

Table III—Data on Motors With Starting Devices Connected to Circuit No. 4

(Motors are 3-phase, 230 volts.)

						Individual Circuits					One Circuit	
						Table 20			Tables 26 & 27	4322	4343(b)	4314
Motor	Type(1)	Size	Code Letter	Full Load Current	Starting Current	Min. Size Cond.	Running Protec.	Branch Ckt. Fuse	Branch Ckt. Fuse	Run Protec.	Branch Ckt. Fuse	Min. Cond. Size
J	AS	25	B	64	225	2(2)	80	200	128	80	295	500
K	WR	30	—	77	115.5	1/0	100	250	115.5	96	295	500
L	GP	30	—	77	410	1/0	100	250	154	96	295	500(3)

Note (1): AS = automatic start low current motor; WR = wound rotor motor; GP = general purpose squirrel cage motor.

Note (2): If each motor is put on an individual branch circuit, Table 20 would apply and would require one circuit of No. 2 size for motor J and circuits of No 1/O for motors K and L. This would be a total of 277,563 cir. mil. Therefore, it might pay to install individual circuits depending upon the total length.

Note (3): For the three motors on one circuit, a 500,000 cir. mil. circuit would be required. Motor K would require a tap of No. 1/O but motor J could have a tap of No. 1, provided the distance was less than 25 feet.

blowing this fuse, if started when all the other motors are running fully loaded. By applying the exception in paragraph 4342, we can use a 35 amp. fuse, and prevent this trouble.

Motors over 1 hp for across-the-line start are connected to Circuit No. 3 in the diagram and data on these are given in Table II. Here again we have shown the figures for individual circuits as determined from Table 20, and also for comparison, the application of Tables 26 and 27.

It is interesting to bring out here the effect of the code letter. Motors G & I are both 5 hp, squirrel cage, 220-volt motors. The full load current is the same, yet the starting current of the first is 82 amps. and of the other, 54 amps. The result of this difference, as reflected in wiring design was brough out in a previous discussion (See ELECTRICAL SOUTH, Nov. 1938, page 29.) and the need for a scheme, such as the code letter, stressed.

If these three motors are placed on one circuit, we will find from Section 4314 that a No. 3 wire will be required, and from Section 4343 (b) that a branch circuit fuse of 111 amps. will be needed.

Motors over 1 hp equipped with starting devices are shown connected to Circuit No. 4 in the diagram. Data on these motors are given in Table III. These three motors are figured in the same manner as those on Circuit No. 3. From Table 20, we find the conductor size, overcurrent protection device, and branch circuit fuse.

If these motors are placed on one circuit, a 500,000 cir. mil. conductor will be required and a 300 amp. fuse. It would be well in this case to figure the cost of putting these motors on individual circuits, since there is considerable difference in the conductor sizes.

In order to determine the conductor size for the main feeder and its protection, we apply Section 4314, using 125% of the rated current of the highest rated motor plus the full load current of each of the others. This together with 10 kva of lighting and appliances figures out as a load of 340 amps. The nearest size Type R conductor would be 800,000 circular mils.

For over-current protection, we apply Section 4363, and find from Table 27 the maximum branch circuit fuse for the largest motor and add to this the full load currents of the other motors, and the 10 kva of lighting appliance load.

From Table 27, we find that a 30hp, squirrel-cage motor with auto-transformer starter can have a fuse of 154 amps. (200%). This, plus the sum of the other motors, plus 25 amps. of lighting and appliances, gives 398 amps. or a 400 amp. fuse.

Requirements Changed For Branch Circuits

(*Continued from page* 25)

planatory than the original Section 2110 of the 1937 Code.

Old Section 2111-Rating of Appliances, has been deleted and the new Section 2111 states the requirements for receptacles. Paragraph "a" states that a fixed receptacle must be installed if portable cords are used. However, if the Code specifically permits the attachment of these cords in some other manner, such as elevator cables, etc., then the receptacle is not required. Section 2111b requires the rating of the receptacle to be at least equal to the load served.

The final paragraph "c" of this section sets forth the requirements for interchangeability of receptacles. The first rule states that attachment plugs which are designed for use with receptacles to be installed on circuits having more than 150 volts between conductors, must not fit receptacles installed on circuits supplied by conductors having less than 150 volts between them. The second rule is applicable to attachments for continuous circuit strips such as "Trolley-Bus," and other types of busways. A plug-in connection, or similar device employed to supply service to appliances or lampholder from busways rated 20 amperes or less, must be designed so that it will not fit busway equipment rated above 20 amperes. However, if the plug-in device or attachment is so designed as to provide over-current protection of not more than 15 amperes as an integral part of the device or attachment then such connectors may be used on busways rated above 20 amperes.

In general, the branch circuit requirements, have been slightly revised. Section 2125a under the 15 ampere circuit instead of listing all the types of lampholders as was done in the 1937 Code simply states "Permanently connected lampholders *of all types*." This revision has also been made in the "bl" paragraph of this section. Section 2125b2 following, has been further clarified by stating "appliances with *individual* rating of not more

than 12 amperes." The use of the qualifier "individual" is new.

The final paragraph, "c," has been completely revised to encompass three conditions of installation of fixed appliances on 15 ampere branch circuits instead of one. First, the 1940 Code retains the old 1937 requirement limiting the installation of fixed appliances to a total of six amperes rating if these are installed *on circuits which also supply lampholders or portable appliances.* The underlined modification is part of the 1940 revision. However, if the circuit supplies motor operated appliances then these fixed appliances may have a total rating of 12 amperes. If only fixed appliances are used, and these are not motor operated types, then this circuit may be fully loaded to 15 amperes total rating.

In the first condition the fixed appliance is limited to six amperes because of its effect on the other lighting load or portable appliances connected to this circuit. A motor rated more than six amperes on starting will cause a very annoying light flicker. Also, any portable appliance connected to such a circuit will not operate at maximum efficiency due to lowered circuit voltage caused by the operation of these large fixed units.

Since motor operated appliances, generally, are not so sensitive to normal voltage variation the circuit rating may be increased. Therefore, for this second condition the total rating of fixed appliances has been increased. However, the starting current of motors imposes a limitation to the total rating so that under such circuit conditions 12 amperes are allowed.

Where, however, fixed appliances are installed as specified under the third set of conditions then we may fully load the circuit to 15 amperes. Under these conditions, a definite load has been installed and there is no reason for the circuit to be overloaded under any normal operations of the appliances.

The twenty ampere branch circuit has several revisions. Section 2132 does not state the minimum size wire, but does set up a minimum current carrying capacity for the circuit conductors. This is done to correlate the conductor capacities to the new types of insulation recognized for these conductors.

In Section 2135a, the rules for the use of medium base lampholders now permit the installation of

(*Continued on page* 47)

APPLIANCE *Service*

Short Cuts and Time Savers In Appliance Servicing

By Allen Parker

Oil Bound Floats on Sealed Refrigerator Units

When a service man checks a sealed refrigerator unit because it is running and not refrigerating, he may think of it as being low on refrigerant because the evaporator is partially frosted. A change of refrigerant may put the unit to operating again only to have it cut out from overload. Such conditions indicate that the unit was not short of refrigerant but had become oil bound in the evaporator and the addition of refrigerant raised the oil level to the return line of the compressor and allowed it to return. Too much refrigerant then in the system continued to supply the float in excess quanities and held the back pressure up to where the thermal overload would keep the unit cutting out. To overcome this, the excess refrigerant must be purged off.

This type of trouble could have been distinguished at first since an evaporator merely low on refrigerant would have shown a low frost line while an oil bound evaporator would have spots on it upon which it would have little or no frost. Oil bound evaporators can be cured most times by placing freezing trays full of hot water in the evaporator. This causes a turbulent action of the boiling refrigerant and flushes the oil into the return line.

Similar trouble may be caused by an oil bound float, and since most sealed units have a purge and charge connection at the float, this can be determined by slightly cracking the purge valve. Oil will foam from it if this trouble exsists. Such a condition should be corrected by operating the unit and slowly purging until the foam disappears.

There are many reasons why a refrigerator or mechanism may need purging to relieve it of excess air, non-condensable gas, etc. It is most important that the correct charge be replaced if it is to function properly, and here is one method that accurately solves this problem for refrigerators making use of sulphur dioxide.

Refrigerator Purging

In purging a refrigerator, it is good practice to use something to counter-act the irritating odor of the sulphur dioxide. A very satisfactory agent for this is soda, such as Arm and Hammer, Sal Soda, or washing soda. Dissolve one pound in two gallons of water, using an enameled pail. Connect a fitting to the purge connection and run the open end of a rubber hose or copper tubing to the bottom of the soda solution. Open the purge valve just enough to allow a rapid flow of sulphur dioxide without any escaping to the atmosphere. Some agitation to the atmosphere will be noted at the surface above the end of the tubing, but there should be very little, if any, sulphur dioxide escaping into the atmosphere.

After about ten minutes of purging, the solution will become effervescent from the carbon dioxide being released. At this point, one quarter pound of refrigerant has been released and about one half of the effectiveness of the solution has been spent. If further purging is believed necessary, it can be continued for an equal time but should be discontinued when the odor of sulphur dioxide is noticeable with the nose six inches above the surface of the solution. The

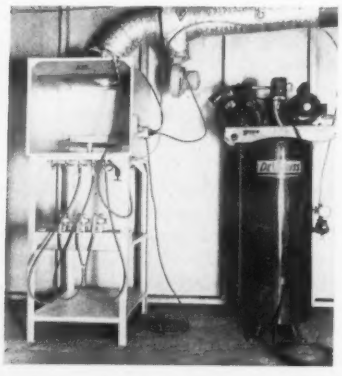
purging valve should then be closed off and the purge line immediately removed from the solution in order to prevent drawing up any of the solution into the line.

Electric Washing Machines

It is common for most users of electric washers, after completing the work, to stop the agitation in the tub before draining it. After the water is drained, there is always a deposit of sludge and grime that must be washed out, and if left for a short time before doing this, it becomes a somewhat dirty job. This can be eliminated by keeping the sludge in suspension and letting it run out the drain. Customers should be instructed to keep the agitator running as the tub is being drained.

Electric Dishwashers

It is difficult to convince a dishwasher purchaser that soap, of all things, should not be used in a dishwasher, and many service calls are made because of the automatic water valve, etc., sticking from the use of soap. Dishwashers should be used with a detergent only, such as soilox or calgonite, and yet some complaints are coming in that these detergents are staining the aluminum cooking utensils. After a check it has been found that this difficulty has been caused by the user sprinkling or dumping the detergent in the dishwasher directly on the utensils which are damp. This sets up a super concentrated solution before the water is turned on and therefore causes the spots on the utensils. This has been eliminated by advising the user to place the detergent in the corner of the tub itself, so that it cannot reach the aluminum before the water is turned on.



Small appliances can be refinished like new with this spray booth.

MOTOR Service

Connecting Diagrams for Lap Wound A-c Motors

By A. C. Roe

Railway Motor Engineer
Westinghouse Electric & Mfg. Co.

THIS article includes diagrams for ten-pole, three-phase, five and ten parallel, nine-lead connections. In addition, a table is included that indicates the resulting line voltage for any possible reconnection of a given winding.

The diagram shown in Fig. 49 is a dual voltage connection arranged for either five or a ten parallel star connection. For the five-parallel connection, the jumpers L_4 and L_7, L_5 and L_8, L_6 and L_9 are connected together and thus form equalizer connections. When connecting a winding of this type, it is advisable to apply the star ring first, with its 15 connections. The star jumper need not be a complete ring but just long enough to extend from groups 14 to 30.

The five-parallel, star connection of Fig. 49 can be changed to a five-parallel delta connection quite easily as follows: First cut all the star connections away from the star ring. Then re-group them into three separate sections, the first groups to include the star leads of groups 14-17-20-23-26; the second section, the star leads of groups 16-19-22-25-28; and the third section, the star leads of groups 18-21-24-27-30. Next, connect the first section to the A lead; the second group to the C lead; and the third section to the B lead. This will result in a five-parallel connection such as shown in Fig. 50.

The diagram shown in Fig. 50 is a dual voltage diagram arranged for either five or ten parallel delta

Table 1—Divisors for Reconnection for New Voltage

(Same Type Connection, 2 or 3 Phase, up to 12 Poles)

Possible Connection	Divisor for Each Possible Reconnection				
	4 Pole	6 Pole	8 Pole	10 Pole	12 Pole
Series	1.000	1.000	1.000	1.000	1.000
2-Parallel	.500	.500	.500	.500	.500
3-Parallel	——	.333	——	——	.333
4-Parallel	.250	——	.250	——	250
5-Parallel	——	——	——	.200	——
6-Parallel		.167	——	——	.167
8-Parallel		——	.125	——	——
10-Parallel			——	.100	——
12-Parallel				——	.084

To Use Table: Let "S" equal series voltage of winding to be reconnected; let "D" equal desired voltage for reconnected winding; then divide "D" by "S", and if this number appears in the proper pole column above, the connection is possible. The line upon which the number appears indicates the connection to be used.

connection. In this case, the star jumper is omitted and only nine lead jumpers are employed. Also, the five-parallel connection, obtained by connecting L_4 and L_7, L_5 and L_8, L_6 and L_9 together, results in an equalizer effect.

It is interesting to note that the five-parallel delta connection can be easily changed to a five-parallel star. For example, trace out the A lead jumper and cut it open between groups 13 and 14. Then disconnect the jumper from the A lead junction that contains groups 14-17-20-23-26. Thus, groups 1-4-7-10-13 remain connected to the A lead. Next, cut the C lead jumper between groups 15 and 16, and cut open, at the C lead junction, the section that has groups 16-19-22-25-28 connected to it. Groups 3-6-9-12-15 are still connected to the C lead. Next, cut open the B lead jumper between groups 29 and 30, and cut open the junction at the B lead of the section that contains groups 18-21-24-27-30; groups 29-2-5-8-11 are still connected to the B lead. To complete the change, connect together the open ends of the three sections separated from the A-B-C line jumpers. Thus, these three sections become the internal star connection of Fig. 49.

A thorough understanding of lap winding connections makes it a simple matter to figure out a complete and desired reconnection.

Last month the voltage changes possible by a slight change in the winding connections were discussed. As this type of change covers the majority of voltage changing, the discussion will be continued this month.

Table 1 lists all the possible connections on 4-6-8-10-12 pole two or three phase motor. The table does not include the star to delta reconnections or delta to star reconnections—only a change from series to 2 or 4 parallel, etc.

To use Table 1 the first step is to convert the present winding into its series voltage (S in Table 1) and then divide the desired voltage (D in Table 1) by the series voltage, S. Under the pole grouping, look for the number obtained by dividing D by S and then the column at the right of Table 1 will give the possible new connection.

For example, consider the eight-pole, 3 phase, 4-parallel star-connected, 220-volt winding discussed last month. Assume that it is de-

(*Continued on page* 49)

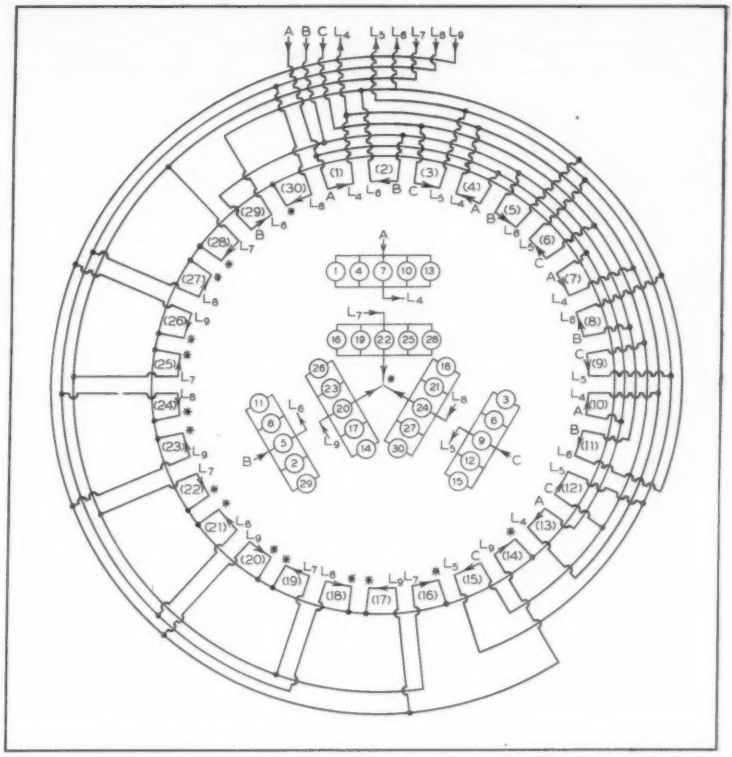


Fig. 49. Five or ten parallel star connection for 10-pole, three-phase lap-wound induction motor with 3 or 9 leads. The five parallel connection has equalizer effect.

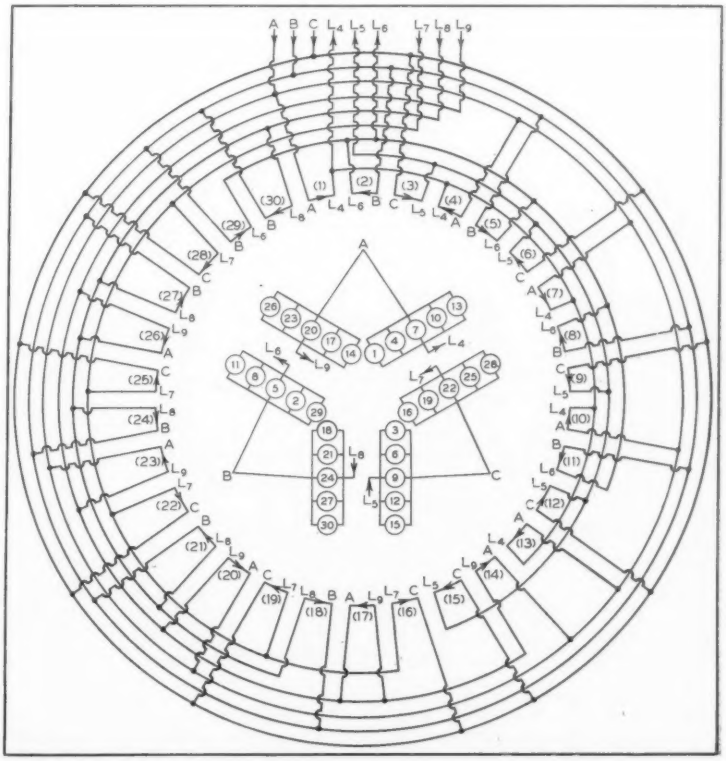


Fig. 50. Five or ten parallel delta connection for 10-pole, three-phase lap-wound induction motor with 3 or 9 leads. The five parallel connection has equalizer effect.

NEWS of the INDUSTRY

Contractors Discuss Problems in Charlotte

Electrical contractors from 30 central North Carolina counties attended a district meeting of the North Carolina Association of Electrical Contractors at Charlotte, N. C., October 30.

Changes in electrical codes, shop talks, new lighting opportunities, adequate wiring and the responsibilities of distributors and contractors were the principal topics which were discussed.

Speakers included N. E. Tindall, secretary of the Aduequate Wiring Bureau of Charlotte; P. T. Tysinger, lighting expert of the Duke Power Company; E. C. Peele, of Burlington, vice-president of the state association; and Peyton King, Charlotte contractor.

The meeting urged that electrical inspectors be provided for suburban and rural areas in order that home owners there will be given the same protection as those who build in cities, and agreed to work toward closed cooperation between contractors and other branches of the electrical industry.

Cooperation with legitimate representatives of wholesale distributors was urged, and a general shop talk period was held in which all contractors were given opportunities to present their problems.

A discussion also was held on the National Electrical Code, apparatus recommended by the National Fire Protection Association, and the standard of the National Board of Fire Underwriters.

Bartlett Heads I.A.E.L. League Managers

J. S. Bartlett, managing director, The Electric Institute of Washington, D. C., was elected president of the International Association of Electrical Leagues for 1941 at the Fifth Annual Conference which was held at the Palmer House, Chicago, November 13 to 15, inclusive. Carl H. Christine, secretary-manager, St. Louis Electrical Board of Trade, St. Louis, Mo., was elected vice president and John A. Morrison, managing director, Electrical Association of Philadelphia, treasurer. O. C. Small and J. F. Biggi were re-appointed secretary and assistant secretary respectively.

Conferees came from 47 major centers and included official delegates representing 31 electrical leagues. Officers and members of a number of the foregoing organizations accompanied their official delegates. All came to obtain the latest information about cooperative business development programs being conducted by the various branches of the electrical industry, with a view of getting ideas and suggestions which can be put to work to strengthen and broaden their local operations. These conferees included representatives of all branches of the electrical industry — utilities, manufacturers, wholesalers, contractors and dealers. The total attendance was 123 for the open sessions which took place on Wednesday and Thursday, November 13 and 14. Seventeen of the league managers attended a special session arranged for Friday, November 15, to discuss league management problems.

Tangible Results Cited For Wiring Campaign

Although the current certified wiring campaign, begun July 1, is scheduled to terminate December 31, the Electrical Association of New Orleans will continue to promote certified adequate wiring throughout 1941, according to George J. Segal, secretary of the association.

Mr. Segel was principal speaker at a meeting of the adequate wiring committee of the association early in November, in the Public Service Auditorium. He reported on findings in the inspection of 85 adequate wiring recommendations since July 1. The canvass, he said, represents a coverage of 20 per cent of the residential building permits in New Orleans since July 1.

There was found to be an average increase, over the figures estimated at the opening of the campaign, of five lighting outlets, five switches, eleven additional convenience outlets, and two additional circuits per home.

"Twelve homes have gone in exactly as planned," Mr. Segel revealed, "and the owners have received certificates made upon the recommendations of the standards set out by the National Adequate Wiring Bureau.

"We expect 8 more homeowners to receive these certificates shortly, and we feel confident that about 40 per cent of the remaining houses will also receive certificates before the end of the year."

Mr. Segel reported that the extras ran $41 average per home, and that the certificates have been issued to small homes of between

This attentive group, comprising more than 100 members of the Associated Electrical Dealers of St. Petersburg, Florida, met recently to discuss cooperative sales activities and the results of the campaigns on major electrical appliances. The audience comprised dealers, their sales personnel, and representatives of Florida Power Corporation. Dr. George W. Allison, The Modern Kitchen Bureau, emphasized the importance of cooperation between dealers and utilities in sales campaigns, and explained what the group can accomplish with the aid of MKB programs.

$5,000 and $7,000, showing that the wiring campaign is not a luxury move. One development builder, he pointed out, has certified five homes of between $5,500 and $6,000.

Preceding Mr. Segel's report, association members presented three appealing skits promoting certified wiring and painting ludicrous pictures of domestic unheavals that can occur in homes that are inadequately wired.

J. Otto Kaelin, vice president of the E.A.N.O., and chairman of the adequate wiring committee, presided.

New Oklahoma Rates Embody Tax Clause

Commercial and residential electric rate reductions in 126 Eastern Oklahoma cities, served by the Public Service Company of Oklahoma, went into effect October 1. The rate reductions, which range from 8.6 per cent to 11.3 per cent, were agreed to by the electric utility and approved by the Oklahoma corporation commission.

The new rate schedule for electric service varies from year to year by reason of the tax clause under which there is charged a base rate plus a percentage added thereto based on taxes.

The tax clause, made a part of the rate schedule, reads as follows: "The rates above do not include taxes. A percentage will be added to the rates shown to cover the taxes assessed against the company. This percentage will be calculated by dividing the total annual tax accrual of the company by the total annual gross operating revenues of the company. The percentage will be initially based on taxes and revenues for the year 1939 and thereafter redetermined annually. This initial percentage is 18 per cent."

In commenting upon the new type of rate schedule, the corporation commission held that the rate was justified "because (1) a lower rate can now be established by consent of Public Service Company of Oklahoma than has heretofore been under consideration, (2) the public good is served by preventing costly and interminable controversies, (3) stability may be served both for the public good and for all parties of interest in such rates, (4) such forms of rates are the outgrowth of proposals by various government controlled utilities, and (5) many other reasons unnecessary here to discuss."

Although the tax clause, as quoted above, is included only in the residential and commercial rate schedules, the Public Service Company reports that it may find it advisable later to provide such a clause in rate schedules for other classes of service.

I.E.S. 1941 Convention To Be Held in Atlanta

The 1941 Convention of the Illuminating Engineering Society is to be held in Atlanta, Georgia, from September 22-25, inclusive, according to an announcement issued recently from the Society's offices in New York. Convention headquarters will be at the Atlanta-Biltmore Hotel.

Th South has long been a frontier of the Society. Since the inauguration of the Georgia Chapter a little over a year ago, and the establishment of the New Orleans Chapter in April, 1940, marked progress has been made by the Society in this section of the country. The interest and enthusiasm already displayed by the Georgia Chapter, and its outstanding record during its first year as an I.E.S. Chapter, indicate that the responsibilities connected with the staging of a national convention are in good hands.

The committee on papers is already at work on the development of a well-rounded business program, and an entertainment program in keeping with the traditions of the Society, combined with the particular type of hospitality long associated with this section of the South, is being planned.

The National Lighting Sales Conference will be held on Monday, September 22, preceding the convention sessions, which will follow on the next three days.

Philip Peeples, Georgia Power Company, Atlanta, will serve as Chairman of the local Convention Executive Committee. The officers of the Georgia Chapter, who will

Philip Peeples, manager of lighting sales, Georgia Power Co., is general chairman of the convention committee.

Although the Georgia Chapter, I.E.S., is only a little more than one year old, it has already gained reputation as an outstanding chapter. Shown above are the officers who directed the activities of the chapter during its first year of existence. From left to right are H. M. Horton, General Electric Co., executive committeeman; W. W. Wildeman, Westinghouse Elect. & Mfg. Co., executive committeeman; C. H. Burch, Curtis Lighting, Inc., chairman; J. F. Whitehead, Jr., Georgia Power Co., secretary-treasurer; and I. H. Stockel, Benjamin Elect. Mfg. Co., executive committeeman. At its recent annual meeting, Mr. Stockel was elected chairman for the ensuing year.

also take an important part in the 1941 Convention are I. H. Stockel, chairman, and J. F. Whitehead, Jr., secretary-treasurer. G. K. Hardacre, Public Service Company of Northern Illinois, Chicago, is Chairman of the Society's National Convention Committee.

Southwestern I.E.S. Holds Conference in Houston

The Fall Lighting Conference of the Southwestern Section, Illuminating Engineering Society, was held in Galveston, Texas, October 25 and 26. Feature discussions at the conference included such subjects as "Architectural Lighting of Stores," "Protective Flood Lighting," "Decorative Lighting," "Advances in Residential Lighting," and a full half-day conference on "Fluorescent Lighting."

The conference heard a report on the papers presented at the Spring Lake Convention of the I.E.S., made by W. E. Folsom, secretary-treasurer of the Southwestern Section. This year's subjects considered at the National Convention are indicative of the enlarging interests of the Society and were, therefore, reviewed rather fully. Such subjects as radiant energy, mercury arcs, ultraviolet, and some comprehensive studies of color vision were included, in addition to the usual technical lighting application papers.

The first paper presented was prepared by Miss Ethelle Hudson, of Dallas Power & Light Company. Miss Hudson covered new methods of control available for the improvement of residential illumination and told of the need of planning home lighting along with the other basic requirements of the home.

H. G. Hrivnatz, of Houston Lighting & Power Company, outlined recent developments in the application of light to service stations, covering the effects of those applications of light to the operation of the station. He emphasized the value of vertical rather than horizontal lighting as of importance in service station operation. Systems of floodlighting to build vertical intensities and at the same time eliminate the annoyance of glare were recommended. Tests on the results of lighting on several stations were reviewed.

The Friday afternoon session started with an enthusiastic discussion of protective lighting, by F. A. Covington, of San Antonio Public Service Co. Mr. Covington described and illustrated the method of protective lighting to be used on the properties of the San Antonio Public Service Company. In general, asymmetric street lighting units are to be used along fence lines adjoining highways or homes. All other fence lines will be lighted by floodlights set 190 feet back from the fence, mounted 16 feet high and directed towards the fence. It was emphasized that lighting will be arranged to build sharp shadows of any intruder. Wiring will be underground and protected by conduit where exposed. Considerable discussion followed.

G. C. Buchanan, of General Electric Company, Dallas, presented a most interesting illustrated talk on "Spectacular Lighting." His illustrations were taken from the various fairs. The slides were not arranged chronologically but skipped around covering different phases of exposition lighting as practiced at the various fairs which would be applicable in or on commercial establishments.

Sam Brochstein, of Brochstein's, Inc., Houston, was scheduled to discuss "Architectural Lighting of Stores," but was unable to attend the meeting and was represented by Mr. Hersh. Slides illustrated some excellent applications of architectural lighting in stores.

The dinner session Friday evening was an enjoyable occasion with no serious business. Remarks were made by Mr. Aicklen, vice-president of Houston Lighting and Power Company; by the chairman, V. J. Graham, the secretary, and others. The chairman commented briefly on the new regional plan of operation, and a wire from the newly appointed regional vice-president, P. M. Rutherford, was read.

The viewpoint of the Dallas Power & Light Company, presented by W. E. Folsom, introduced the subject of fluorescent lighting and started the discussion rolling at the Fluroscent Sales Conference, held Saturday.

Reports reviewed indicated that many manufacturers are doing increased business in incandescent

Dinner meeting of Southwestern Section, I.E.S., in Galveston.

fixtures, in addition to extensive fluorescent fixture sales. The introduction of fluorescent lighting is evidently adding impetus to the general improvement of illumination.

The methods of keeping records of all fluorescent installations sold in the territory were outlined. It was reported that on typical installations studied, there had been some loss of load but an increase in kilowatt-hours used. There is also a decided trend toward the use of high power factor equipment.

Death Claims Prominent Mississippi Power Man

William A. Moore, vice-president in charge of sales for Mississippi Power and Light Company, Jackson, Miss., died Monday morning, November 11, in Jackson.

Mr. Moore, who was only 37 years old, was an alumnus of Georgia Institute of Technology, graduating in electrical and mechanical engineering in 1924. For a short time, he was associated with the General Electric Company, and for the past ten years has been associated wih the Mississippi Power and Light Company. His promotion to the position of vice-president in charge of sales was made in 1937. Previous to that time, he had been in charge of the company's commercial, industrial, governmental and municipal sales for several years. He was active in industrial development work in Mississippi and had taken an active part in the work of the Southeastern Electric Exchange. Among other positions held in that organization, he was the first chairman of the employees information committee.

Houston Electrical Inspector Passes Away

Fred Goodson, chief electrical inspector for the city of Houston, Texas, died early Monday morning, November 18, after a brief illness. Mr. Goodson had been a resident of Houston for 35 years and was well known to the electrical industry of the Southwest. He was a member of the I.A.E.I. and was prominently identified with the activities of the Southern Section.

Mr. Goodson was a member of Gray Lodge 329, A. F. and A. M., Scottish Rite bodies, Electrical Workers Union No. 716, and Houston Lodge No. 151, B. P. O. E.

Bates Named Operating Vice President of C.P. & L.

J. L. Bates was named operating vice-president of Central Power and Light Company recently, succeeding H. W. Cooper, who resigned to become associated with the Minnesota Power and Light Company in an executive capacity, according to announcement by the company's home office in Corpus Christi.

The utility's new chief of operations was born and raised in Beeville, has a 17-year service record with CPL and has lived in South Texas all his life except for 22 months overseas during the first World War.

Mr. Bates was educated at Texas A. & M. College, leaving to enter

Two of the largest groups of home economists ever assembled in the Southeast gathered recently at meetings sponsored by the southeastern district office of the Edison General Elecric Appliance Company. The upper photograph shows a group that met recently at the Georgian Terrace Hotel, in Atlanta, for a two-day meeting, to hear Hotpoint home economists discuss the most modern uses and developments in electrical household appliances.

The group in the center attended a similar meeting held in St. Petersburg. The men seated in front in this photo are G. E. Dangler, commercial cooking equipment specialist, H. W. Nagel, electric water heater specialist, and H. K. Dewees, southeastern district manager, all of Edison General Electric Appliance Company's southeastern district headquarters in Atlanta. Men standing in the rear are Ralph Schroeder, service manager, Florida Power Corporation; W. W. Gibbs, Hotpoint representative in Tampa; R. H. Giedd, new business manager, Florida Power Corp., and R. B. Roberts, general sales manager, Florida Power & Light Co.

Featured on the program at both meetings were three of Hotpoint's home economists (the three ladies standing in front at the extreme right of the center photo) Mildred Hickman, director of home service, and Clara John, assistant director, both of Chicago; and Stella Floyd, home service advisor of the southeastern district office in Atlanta. In the lower photograph, Mr. Dewees, Miss Hickman, and Mr. Gibbs proudly display food prepared during the demonstration at the Florida meeting. The Florida meeting was concluded with an informal buffet supper served in the club rooms of the Florida Power Corp.

the U. S. Army. His first position with C. P. L. was as manager at McAllen in 1923, following which he became manager at Mission, assistant manager of the Valley district, and then vice-president and division manager. After being stationed in his last capacity at Victoria for a year, he removed with Mrs. Bates to Corpus Christi four months ago.

Cameron, of Holophane Co., Heads Illuminating Society

At their recent convention, the Illuminating Engineering Society formally presented as their president for the coming year, A. D. Cameron, vice president and member of the board of directors of the Holophane Company. Prior to his

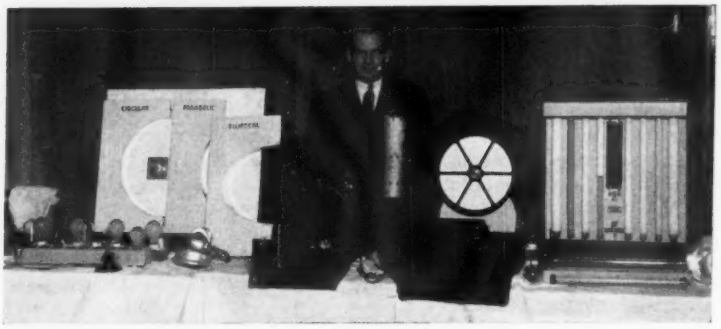
A. D. Cameron

election as president, he had many years of active service on I.E.S. committees, was general secretary for three years, and served as vice president for two years. His experience in the lighting business is long—thirty years.

A constitutional change adopted by the I.E.S. to be effective from October 1, provided for the election of eight regional vice presidents, to be chosen by nominating committees representing the sections and chapter located in each region.

Roy A. Palmer, advertising and merchandising manager for Duke Power Company, Charlotte, N. C., was elected from Region E, which comprises the southeastern states and includes the Georgia and New Orleans Chapters.

P. M. Rutherford, sales promotion manager of Dallas Power & Light Co., Dallas, Texas, was elected vice president for Region G, which includes the southwestern states and the very active Southwestern Section, I.E.S.



Commercial Sales Manager J. F. Tuohey, of the Arkansas Power and Light Co., and his "selling sight show" which he has presented to numerous schools, clubs and other organizations.

Selling Sight Shows Presented in Arkansas

J. F. Tuohey, commercial sales manager for the Arkansas Power and Light Company, has developed a "selling sight show" that is proving most effective in promoting a better understanding of lighting applications on the part of his company's customers. It consists of an educational demonstration of unusual lights and an entertaining line of patter to accompany it. So popular has his demonstration and talk become that he is finding it difficult to get the time to appear before all the schools and clubs who are asking him to appear.

Starting his speech by striking an ordinary kitchen match and pointing out that the flame is the first known method of illumination, Mr. Tuohey spends about 35 minutes on each presentation. While the entire talk and demonstration is strictly educational, it is possible for him to bring out the various methods employed in improved lighting systems and get across many impressive sales points.

A replica of Edison's first electric light, various sizes of modern lamps, fluorescent lamps, "invisible" light, the stroboscope, polaroid glass, the "grain of wheat" lamp, and many other unusual forms of lighting are included in his demonstration items. Considerable part of the talk is devoted to light control, in which the various kinds of reflectors are shown and explained.

Welsh Named Superintendent Of Power for Southwestern

John R. Welsh has been named superintendent of power for Southwestern Gas & Electric Co., Shreveport, La., according to announcement by A. Lieberman, president. Mr. Welsh fills the vacancy left by the recent promotion of N. P. Heath to vice-president and general manager of the Shreveport and Caddo divisions.

Mr. Welsh was formerly associated with the L. E. Myers Company, a construction company that worked on various power projects such as hydroelectric and steam plants, transmission lines, distribution systems and substations. While working for the Myers organization, he held various positions including engineer, superintendent and chief engineer, which position he held when he resigned in June, 1940, to join the Southwestern Gas & Electric Co.

Memphis Contractor to Coordinate Defense Housing

Joe A. Fowler, Memphis electrical contractor and executive director of the Memphis Housing Authority, has been "drafted" by the Federal Government to assist in establishing the Defense Housing Program for the nation, it was announced recently by Edward F. Barry, chairman of the housing authority.

Mr. Fowler will be loaned to the defense housing organization during the emergency, and will make his temporary headquarters in Washington. He left Memphis shortly after the appointment to take up the post of area co-ordinator for defense housing.

"Under Mr. Fowler's leadership, the Memphis Housing Authority has moved forward until it is generally regarded as having the best administered and best managed local housing set-up in the Nation," said Mr. Barry. "It was on this record of magnificent performance that Mr. Fowler was selected for defense housing duty."

New Vice Presidents Named By Oklahoma Gas & Electric

Alfred A. Brown, formerly sales manager for Oklahoma Gas & Electric Co., has been appointed vice-president in charge of sales, according to recent announcement. Mr. Brown, who has been associated with the Oklahoma Gas & Electric Co. for twenty years, is well known for his activities in developing dealer cooperation in the sale of load building electrical appliances. He succeeds O. A. Jennings, who retired.

At the same time, it was announced that B. M. Lester, formerly secretary and general auditor of the company, had been appointed vice-president and treasurer, succeeding W. R. Emerson, retired. The position of secretary vacated by Mr. Lester will be filled by Howard Henley, formerly assistant secretary.

West Virginia's Lighting School Well Attended

West Virginia University, long a believer in building itself into the economic life of its state, last October 28-29 opened its doors to electrical contractors, engineers, architects, wiring experts, school officials, building superintendents, and utility men for a two-day course on wiring and lighting problems, designed to bring those attending up-to-date on recent developments in artificial illumination and to seek a common medium through which all groups might "tell the same story" in the promotion of better light—better sight.

The school, one of the first extension courses of its kind in the country sponsored by a state university, combined serious lectures, open forums, quizzes, and blackboard drills with exhibits and displays, movies, lantern slides, and even a special version of "Information Please" in which the "students" quizzed their "professors." Discussed were such items as the history and development of artificial light, photometry, design of lighting, fixture design, commercial, industrial, and school lighting applications, the new "drying lamps," service entrances and panelboard control, power factor, fluorescent lighting and the economics of fluorescent vs. incandescent illumination.

Among the speakers were Samuel G. Hibben, director of applied lighting, H. C. McDaniel, and Al Paulus, all of the Westinghouse company; E. D. Altree, director of illuminating engineering, W. G. Darley, and J. M. Ketch, of General Electric Co.; A. W. Anderson, of the Square D Company; John Hoeveler, Pittsburgh Reflector Company; F. R. Kolb, of the Duquesne Light Company, Pittsburgh; Hugh Archer, of Detroit Edison Company.

Tide Water Company President Resigns

The resignation of Miles Cary, who has served as president of the Tide Water Power Company since June, 1937, was announced on October 22 by F. A. Matthes, chairman

A two-day lighting and wiring school sponsored by West Virginia University was enthusiastically supported by the electrical industry of that area as indicated by the photo below showing part of the group attending. Above is a group of speakers, who participated in the program. Front row, left to right, Hugh Archer, Detroit Edison Company, Detroit, Mich.; Dr. A. H. Forman, University department of electrical engineering; W. G. Darley, General Electric Company. Back row, left to right, A. W. Anderson, Square D Company, Pittsburgh; R. N. Green, Fostoria Pressed Steel Corporation, Detroit, Mich.; E. D. Altree, General Electric Company's director of illuminating engineering; H. C. McDaniel, Westinghouse Lamp Company, Pittsburgh.

of the company's board of directors. No action had been taken regarding the election of his successor, the chairman said.

Mr. Matthes issued a brief announcement saying Mr. Cary resigned on account of the condition of his health. He came to Wilmington from a similar post in Florida, assuming the post of president of the Tide Water Power Company upon the retirement of Mr. Matthes who later was called to the post of chairman of the board.

Graybar Opens New Chattanooga Branch

To meet the rapidly expanding electrical needs of industry, Graybar Electric Company is opening an office and warehouse in Chattanooga, Tennessee. Establishment of this new house brings the number of Graybar distribution points to a total of eighty-five throughout the country.

C. C. McGraw

The Chattanooga branch, which will be in charge of C. C. McGraw, commenced active operations November 1. Mr. McGraw will have as his assistant J. P. Majors, service supervisor. The address of the Chattanooga branch will be 1222 Carter Street, with headquarters in Knoxville.

Several changes in personnel have beeen announced recently by Graybar Electric Co. Among these were the following:

L. H. Whitten, formerly manager of the Washington, D. C., office, has been appointed general communications sales manager, reporting to D. H. O'Brien, general sales manager. His headquarters will be at Washington, D. C.

J. H. McDonnell, formerly line material and supply specialist at

Philadelphia, has been appointed acting manager of the Washington branch.

L. O. Fryer, formerly sales manager at San Francisco, becomes a member of the general sales department, with the title, "secretary to the General Sales Committee," reporting to E. A. Hawkins.

E. C. Fox, formerly city salesman, has been appointed sales manager of Graybar's Miami branch office.

Honor Roll of Southern Section

The following members of the Southern Section, International Association of Electrical Inspectors, have enrolled one or more new members for the association since the current membership campaign was initiated at the close of the annual meeting, September 14. Numbers at right indicate number of new members enrolled by each individual.

Bagwell, H. O.—Carrollton, Ga.	1
Bommer, A. J.—Dallas, Texas	3
Camus, Frank—Shreveport, La.	6
Edwards, Virge—Lyon, Miss.	16
Fisher, J. G.—Jackson, Miss.	3
Fletcher, G. R.—Alexandria, Va.	2
Goodson, Fred—Houston, Texas	3
Hancock, A. E.—Austin, Texas	1
Hendricks, R. B.—San Antonio	5
Jones, C. T.—Atlanta, Ga.	1
Kersey, T. M.—Dallas, Texas	1
McKinney, E. W.—New Orleans	2
Muller, Paul—New Orleans, La.	1
Peters, K. O.—St. Petersburg, Fla.	2
Sagendorf, F. P.—Fairfax, Va.	1
Segall, B. Z.—New Orleans, La.	2
Sprouse, J. B.—Clarksdale, Miss.	7
Stewart, W. B.—San Antonio, Tex.	1
Turnage, L. A.—Hartsville, S. C.	1
Weber, Chas.—Beaumont, Tex.	1
Welman, George—New Orleans	2
Whitner, Jos.—Atlanta, Ga.	2
Zimmer, Chas.—Houston, Tex.	1
Total	65

Membership in the I.A.E.I. provides a splendid opportunity to learn the requirements of the National Electrical Code through publications of the Association and attendance at chapter and section meetings.

Light Conditioning Gains Impetus in Dallas

Approximately 350 dealers and their sales people attended the light conditioning sales meeting at the Hotel Adolphus, Dallas, Texas, on the evening of September 7th, sponsored by the Dallas Power & Light Company.

C. A. Tatum, DP&L sales manager, introduced Harold Green, General Electric light conditioning sales specialist from Nela Park, who outlined the sales opportunities which the light conditioning program presents to Dallas electrical dealers. By means of charts and cleverly conceived skits, he demonstrated the ease of selling this newest of lighting equipment.

R. C. Dixon, DP&L residential sales manager, presented the extensive advertising schedule which the company is to follow this fall and winter in promoting the light conditioning program. He offered the services of DP&L dealer coordinators and home service advisers.

MANUFACTURERS' News

All-Steel-Equip Company Occupies Modern New Office

Just completed, adjacent to its main plant in Aurora, Illinois, are the new general offices of All-Steel-Equip Company, Inc. This controlled conditions building is outstanding for efficient planning, modern design and sound structure.

The company's office force, sales personnel and executive staff have been transferred to the new headquarters, comprising 16,000 square feet of modern air-conditioned office space, lighted entirely by fluorescent tubes in concealed troughs that provide continuous bands of light across the entire area.

Designed and built by the Austin Company who pioneered in the development of windowless buildings, the offices occupy the second floor of a 43,400 square foot addition. Modern warehousing, receiving and shipping facilities are also provided for, thus liberating a substantial area in the existing plant for manufacturing operations which will increase this plant's production capacity.

Both office managers and engineers were entirely free to work out all their office layout problems because all daylight and natural ventilation were excluded. There was no need to consider windows, drafts, the direction of lighting or related questions. Everything was planned from the standpoint of operating efficiency.

In designing the lighting installation, All-Steel-Equip Company called into play their own experience in sheet metal work and as manufacturers of switch boxes, outlet boxes, conduit fittings and other electrical products. All-Steel's own engineers, together with the Austin Company and General Electric Company, worked out a system of fluorescent lighting. Requiring 26,000 watts, this system of fluorescent tubing totals almost a half-mile in length in the general office alone. The tubing was installed in special continuous troughing and reflectors, manufactured in the Aurora plant. A general overhead light source was thus provided that blankets the entire working plane.

Average light meter readings range upward from 46 foot-candles in the general office, where troughs are spaced 6' 7" apart, to 55-foot candles in the transcribing, tabulating and printing departments, where the troughs are 4 feet apart. In the engineering and production office, where 5-foot spacing has been observed, the readings show 61 foot-candles.

Jackson, Miss., Site of G-E Lamp Factory

Z. G. Taylor, of General Electric Company, Nela Park, Cleveland, Ohio, has been named manager for the new General Electric lamp works now nearing completion in Jackson, Miss. Meeting with officials of Jackson Chamber of Commerce, Mr. Taylor revealed recently that lamp-making operations at the new plant would begin early in December.

The facilities of the new Jackson plant will be devoted entirely to the manufacture of fluorescent lamps. Plant operations will include the manufacture of glass, drawing of tubing, bulb making, complete lamp production, and adequate warehousing facilities. The factory will have its own railroad siding to simplify transportation problems. Equipment will be provided for the manufacture of from 10,000 to 20,000 lamps per shift, and there will be upwards of 250 people employed on each shift.

The new lamp manufacturing facilities have been required because of the increasing popularity of fluorescent lamps. After its first full year last January, the General Electric fluorescent lamp works in Cleveland turned out nearly two million of the new lamps.

Z. G. Taylor

More than 500 Jackson women are expected to find employment in the new plant. The technical organization which will guide the new employees in their work will consist of Mr. Taylor, Carl Lenz and W. C. Smitley, from Cleveland; H. M. Hubbard of Newnan, Georgia, and E. G. Grigg, of Richmond, Virginia.

An outstanding example of modern industrial offices is this new windowless, air conditioned building of the All-Steel-Equip Company, Inc., of Aurora, Ill. The company's office force, sales personnel, and executive staff have been transferred to the new headquarters. At left is an exterior view of the two-story building. At right, a view of one of the general offices showing the fluorescent lighting from concealed troughs. Light meter readings in the offices range from 46 foot candles in the general office to as high as 61 foot candles in the engineering and production office.

Small Appliance Sales People Get Training

During the past three months, ending in early December, twenty small appliance merchandising meetings have been sponsored in Texas and Oklahoma by the Southwestern Division of Westinghouse Electric & Mfg. Co., as part of a national program.

The meetings were for the floor sales people of the larger small-appliance accounts, who were given instruction and training in the selling of small appliances, as well as a thorough product story. The keynote of the training has been to classify the prospect and make sales presentations along the line of the prospect's interest.

Meetings were limited to a maximum of twenty people in order that each might receive personal instruction. Each meeting lasted about two and a half hours and included, as a part of the program and training, the cooking of an entire meal.

Three trunks of equipment and appliances were taken from place to place for the meetings, which included four roasters used in cooking the meals. The groups were first served with an appetizing punch and hors d'oeuvres, and then the combination of cooking, training and dinner for the "students" immediately got under way.

The evening's training centered around the dinner, which included such appetizing foods as fried chicken, potatoes, vegetables, hot rolls, coffee, salad and relishes. Then for dessert, came a surprise. A quantity of batter was produced and each person was required to prepare his own dessert—hot waffles, with butter and syrup. Most of the "students" were girls and women, though there was also a sprinkling of men. About 75 per cent of them had never baked waffles.

This informal group of small appliance sales people is typical of a number of small appliance merchandising meetings that have been sponsored in Texas and Oklahoma by the southwestern division, Westinghouse Electric & Mfg. Company, to provide training in the use and selling of small appliances. This group met in the club rooms of the Public Service Company of Oklahoma, at Tulsa.

The entire series of meetings was in charge of J. H. Tuttle, Dallas, Texas, manager of sales development of the Southwestern Division. He was assisted by Miss Louise Venable, district home economist, with all preliminary local arrangements made by the local Westinghouse distributor or dealer in advance.

Aluminum Co. Expands For Defense Production

Commenting on the statement by the National Defense Commission as to increased facilities to be provided by various producers and fabricators of aluminum, Roy A. Hunt, president of the Aluminum Company of America, said recently that his company is expanding much more rapidly for defense purposes than it would do for normal growth. The company has allocated more than $150,000,000 for expansion to meet defense requirements and the Aluminum Company of America will do its own financing. Because of this highly technical nature of its manufacturing operations, construction for the most part will be done by the company's own engineering and construction organizations.

Included in the more than $150,000,000 expansion program, there are now being built, additional to the proposed increases in Tennessee and Washington using T.V.A. and Bonneville power and additional to the Fontana project referred to, two substantial hydro-electric projects at Glennville and Nantahala, North Carolina, together with the smelting plants utilizing power from these hydro-electric developments, and there are now being built or plans being drawn for new fabricating facilities at the company's plants at Alcoa, Tenn., Lafayette, Ind., Los Angeles, Calif., New Kensington, Pa., Detroit, Mich., Cleveland, Ohio, Edgewater, New Jersey, and Massena, N. Y. These additional fabricating facilities will increase the company's output of castings, sheet, tubes, screw machine products, extruded and rolled shapes, rods and bars, and forgings.

A further reduction of one cent per pound, in line with its policy of lowering prices on its aluminum, will be made by Aluminum Company of America on November 18, 1940. This brings the price of ALCOA aluminum ingot to 17c a pound.

Hotpoint's Christmas Billboard Popular

Hotpoint retailers are making reservations now for Christmas billboard posting to take advantage of the holiday poster just announced by W. A. Grove, manager, Hotpoint advertising department. In this colorful new billboard, wise old Santa sagely remarks, "That's What They All Say," as a lovely homemaker whispers her wish for a Hotpoint range or a Hotpoint refrigerator—or both.

In addition to this new billboard, the Hotpoint advertising department is making available a smart Christmas display which may be used with any of the five Hotpoint home appliances, as well as an over-size Christmas seal which can be pasted on the new Hotpoint appliance and has space for the customary "To . . ." and "From . . ."

Colt Electrical Division Expanded in New Quarters

In a recent open letter to the trade, D. G. Phelps, vice president, Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn., denied rumors to the effect that activities in the Electrical Division of the Colt Company

are either being given up or set aside at present in behalf of the production of the firearms products.

"As it should be doing at this time," stated Mr. Phelps, "our company is expanding its firearms facilities to the greatest extent possible and is producing items vital to our National Defense Program in a manner entirely satisfactory to those interested in this program. To facilitate such expansion and at the same time continue to serve our very active and growing Electrical Division, the substantial amount of space used by the Electrical Division was made available to the Firearms Division in the early summer by moving the Electrical Division to a very fine building completely isolated from our firearms plant.

"Advantage was taken of the move to provide many new facilities to the Electrical Division, with the result that since the establishment of the Electrical Division in its new location, its productive capacity increased so that the volume of electrical products shipped in the month of September was the largest in the history of the Cold Electrical Division. At the moment of writing it is very evident that this performance will be exceeded considerably in the month of October."

G-E Executive Elected President of NEMA

E. O. Shreve, vice president of the General Electric Company, was elected president of the National Electrical Manufacturers Association during the annual meeting which was held in New York, October 28-November 1. He succeeds C. E. Swartzbaugh, president of the Swartzbaugh Manufacturing Company, Toledo, O.

E. O. Shreve

Other officers elected were five vice presidents and a treasurer. The vice presidents are: Howard E. Blood, president and general manager, Norge Division, Borg-Warner Corporation, Detroit; Ralph Kelly, vice president, Westinghouse Electric & Manufacturing Company, New York; F. W. Magin, president, Square D Company, Milwaukee; W. E. Sprackling, vice president, Anaconda Wire & Cable Company, New York, and G. C. Thomas, Jr., president and treasurer, the Thomas & Betts Company, Elizabeth, N. J.

The James H. McGraw Award Manufacturers Medal recently was presented to George A. Hughes, chairman of the Edison General Electric Appliance Company, of Chicago, in recognition "of his distinguished contribution to the advancement of the manufacturing branch of the electrical industry as 'Father of the Electric Range', promoter of a broader service to the electric home, pioneer of promotional rates for loading building, creator of electric markets." The presentation was made at a special luncheon during the meeting of the National Electrical Manufacturers Association in New York City.

American Steel and Wire Announces Expansion

The largest rehabilitation and improvement program ever undertaken by the American Steel & Wire Co., subsidiary of U. S. Steel Corp., in Worcester, the cradle of the American wire industry, was announced today by Carl I. Collins, Worcester district manager for the company.

The program includes four additions to the company's present South Works and complete rearrangement and improvements which will result in one of the most efficient wire mills in the United States.

The work will start immediately and plans call for completion within twenty months. The largest of the new buildings will house the manufacture of round and shaped wire and strip, and is to be constructed south of the present South Works. This building will be 1,035 feet long and 500 feet wide. This will permit the manufacture of all the company's steel products now produced in Worcester under one roof.

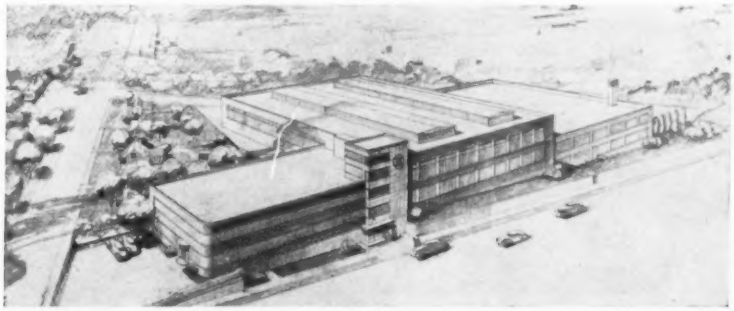
Connected with this mill will be a new two-story office building and physical laboratory, occupying approximately 17,000 square feet.

The company's copper facilities at Worcester also will be rearranged and consolidated in two new buildings, one of two stories which will include the copper stranding operations and warehouse, and the other, one story which will include copper drawing, cleaning, annealing, cold rolling and tinning operations.

Automatic Electric Mfg. Co. Expands Factory Facilities

The Automatic Electric Manufacturing Co., Mankato, Minn., manufacturers of time switches, flashers and interval timers, have just moved into a new office and factory building which will provide them with nearly twice the space formerly occupied. Increased demand for the Automatic line of flashers and switches made the move necessary.

The new factory, located at 10 State Street, is entirely of fire-proof construction and features year round air conditioning throughout the entire plant. Large windows provide natural lighting but each workman's bench is provided with the latest type of individual fluorescent fixture.



This is the architect's conception of a $500,000 building to house southeastern offices, warehouses and service departments of the various Westinghouse enterprises to be built in Atlanta soon. Plans for the new building were announced recently during the visit of A. W. Robertson, chairman of the board, and other high-ranking Westinghouse officials to Atlanta. The building will have 125,000 square feet of space and will contain the district sales office, supply company, service depot, and X-ray lamp and elevator divisions. In the office section of the building, glass blocks will supplant windows as this part of the building will be completely air conditioned. Other features of this section will be modern fluorescent lighting and sound insulated ceilings.

News About People—

C. H. Guy

S. M. Davison

W. B. Creech

Three important changes in the merchandising division of Westinghouse Electric & Manufacturing Company have just been announced by **Frank R. Kohnstamm,** sales manager of the division.

Charles H. Guy, northwestern district merchandising manager, has been appointed assistant sales manager of the division. Mr. Guy is well known in the South having served as merchandising manager of the south central district with his offices at Birmingham, Ala., up until August, 1939. Mr. Guy has been associated with the promotion of electrical appliances since 1920 and with Westinghouse since 1935.

S. M. Davison, merchandising division manager of the southeastern district, with headquarters in Atlanta, succeeds Mr. Guy as northwestern district merchandising manager, with headquarters in Chicago. Mr. Davison's first association with the electrical industry came in 1930 as a distributor in Philadelphia. Two years later he joined the Westinghouse Company and served as district refrigeration manager in Philadelphia until 1935, when he was appointed southeastern merchandising manager.

William B. Creech, former sales development manager in the southeastern district, has been named merchandising manager of that district, succeeding Mr. Davison. Mr. Creech is a native Georgian and attended the University of Florida. He joined the Westinghouse Company in 1929, serving first as a refrigeration supervisor and later as merchandise supervisor for the south central district. In 1929 he was named sales development manager for the southeastern district.

* * *

Announcement of the opening of a Washington office of Nash-Kelvinator Corporation, manufacturers of automobiles and electrical appliances, was made recently by **George W. Mason,** president. Mr. Mason also announced the appointment of **Campbell Wood** as assistant to the president and as director of the Capitol office. Mr. Wood, a former Army officer, has been with Nash-Kelvinator Corporation since shortly after the last World War, and is quite well known in Washington government circles. He is a native of Texas and a fromer resident of San Antonio and of Dallas.

* * *

Announcement of the formation of a Kelvinator factory sales unit, which will be known as the commercial, parts and service sales division, and which will be headed up by **Thomas A. Farrell,** is made by **Frank R. Pierce,** general sales manager of the Kelvinator Division of the Nash-Kelvinator Corporation. For the past twelve months, Mr. Farrell has been Kelvinator's eastern sales manager. His background includes eleven years with Frigidaire.

* * *

Jesse H. Lide has been appointed assistant manager of the merchandise advertising and sales promotion department of the Westinghouse merchandising division, according to announcement by **Roger H. Bolin,** department manager. For the last six years, Mr. Lide has been sales development manager of the merchandising division middle Atlantic district, with headquarters in Philadelphia. Mr. Lide is a native of Mississippi and attended Mississippi State University. He began work with Westinghouse in East Pittsburgh in 1924 and spent several years in the advertising department in Pittsburgh and in Mansfield. For three years he was sales development manager in Atlanta. He left Westinghouse for several years to become advertising manager of the Rome Wire Company, and later of General Cable Corp., but returned to Westinghouse in 1932.

V. H. Branham, formerly of the Walker Electrical Company, Atlanta, is now associated with **Morris Landers,** manufacturers representative of Atlanta. Mr. Branham will travel in Tennessee, North and South Carolina, Georgia and Alabama, for the Landers organization, handling all lines.

V. H. Branham

Among the manufacturers represented by this organization are Hub Electric Company, Goodrich Electric Company, and Sangamo Electric Company.

* * *

Oliver G. Brush has been appointed representative for the sale of Matthews Products in the state of Alabama, Panhandle of Florida, and most of the state of Tennessee, according to recent announcement by W. N. Matthews Corporation, St. Louis.

* * *

Announcement of the appointment of **Earl Marr** as general sales manager of the Airtemp Division, Chrysler Corporation, has just been made by **D. W. Russell,** president. The new appointment comes within a year from Mr. Marr's last appointment as sales manager of the heating division of Airtemp, which position he took over in November, 1939. Mr. Marr has had more than 17 years' experience covering every phase of manufacturing, sales and merchandising in connection with automatic heating equipment. In 1936, he received the Aladdin's Lamp Award from the directors of the Oil Burner Institute for outstanding individual achievement in the industry during 1935.

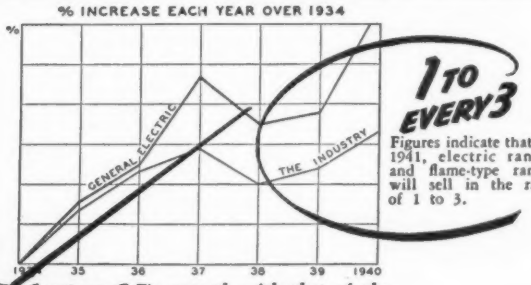
Campbell Wood

T. A. Farrell

J. H. Lide

GENERAL ELECTRIC TURNS ON THE HEAT

With Greatest Electric Range Promotion Ever Created for Dealers!



1 TO EVERY 3

Figures indicate that, in 1941, electric ranges and flame-type ranges will sell in the ratio of 1 to 3.

Compare G-E's growth with that of the whole industry! Total sales of electric ranges increased from 50,000 in 1933 to 448,000 in 1940 (est.). An amazing growth! Yet this rate of increase has been exceeded by that of General Electric Ranges!

The Trend Is to Electric Cooking! And 1941 Will Smash the All-Time Record of 1940!

SWING UP WITH GENERAL ELECTRIC RANGES

Alive with New Features for 1941!

Swing up to higher profits with this range that's racing ahead! Cash in on these salable features! The new "Flavor-Saver" Oven. The new, faster Thrift Cooker. The Calrod "charcoalike" broiler. The No-Stain Vent to help keep kitchens clean. And a raft of other advancements for clean, cool, fast, low-cost electric cooking.

Cash in on the powerful G-E promotion for 1941! Bigger, smarter, more intensified than ever! Smashing *color advertising in national magazines.* More compelling *mailing pieces.* More arresting *displays.* More attractive *newspaper ads* for you to run locally. All crammed with "sell."

Get set—pretty—with General Electric Ranges for 1941. Join the trend. See your G-E distributor now.

General Electric Co., Bridgeport, Conn.

Every Roast Will Work for You in 1941!

Watch for the big G-E announcement that will make all America "roast-minded" — and "General Electric Range-minded"! . . . Soon!

GENERAL ELECTRIC RANGES

New Electrical Products

Harvester Model Range

A streamlined new range model, known as "The Harvester," was introduced to Westinghouse distributors at a special convention in Mansfield. The new range, described by R. M. Beatty, manager of the Westinghouse Range and Water Heater Department, "The finest range Westinghouse has ever offered for so little money," will retail for $129.75 in the Mansfield zone.

Two features of the new model are an ultramodern, triple-louvered platform light with chrome trimming, and streamedlined new white handles, beaded with chrome. White switches complete the color harmony.

The range includes such features of the 1940 Westinghouse range line as the five-speed Corox surface unit, full-sized True-Temp oven, and a five-heat Economy Cooker.

Introducing the new model and intensifying its regular range selling activity, Westinghouse will tie in with the Modern Kitchen Bureau's "Alice in Electrical Wonderland" electrical range drive, Mr. Beatty told the distributors. The program will be supported by an intensive advertising campaign and numerous dealer helps.

Holiday Model Refrigerator

Designed especially for promotion during the holiday buying season, Frigidaire Division, General Motors Sales Corporation, announces a fully fitted six cubic foot Frigidaire which carries a Zone B retail price of $118.50. This special model, company sales executives state, has features previously omitted from the

Sales Helps for the Appliance Dealer

Shown here are several attractive demonstration and counter display items being made available by manufacturers.

(1) A new "step-up-and-see-for-yourself" demonstrator for showing the difference between ordinary light and Polaroid light offered by Polaroid Corporation, Cambridge, Mass.

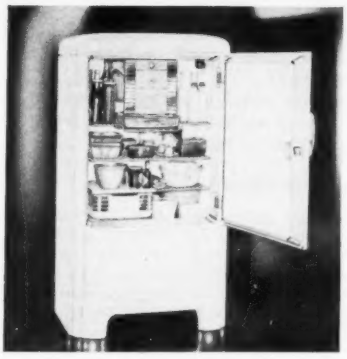
(2) Kelvinator offers special promotional material and merchandising helps in connection with their announcement of a special 6½ cu. ft. Christmas refrigerator model, a deluxe equipped refrigerator with a wealth of special features which will carry a suggested price of $149.95.

(3) Universal is furnishing free with orders for 3 or more E65 cleaners this sales-compelling flasher display in four colors. It features a two-tone lighting effect, the button in red and the "Tattle-Tale" light in white.

(4) This die-cut display features Knapp-Monarch's new electric biscuit baker. The display, in five colors, provides a section to hold the biscuit baker.

(5) This quick-selling display produced by Universal to promote their new Twin-Power Food Mixer should pull many Christmas sales.

(6) Another Knapp-Monarch counter merchandiser, this display for the Natural Angle electric shaver has a circular glass mirror, supported by a frame of blond wood. It includes a dummy razor and an electrical connection for demonstrating an actual shaver.

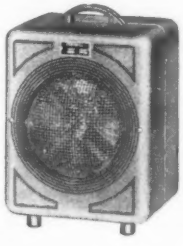


company's low priced model.

Among the extra features listed for this low-priced Christmas model are its full six cubic foot size, larger refrigerating unit, ice trays of the Quicktube type, double width dessert tray, freezer door, sliding hydrator, safety-cycle defroster, gray door trim, plus basic featues identified with Frigidaire refrigerators.

LaSalle Electric Heater

A new electric space heater is offered by the newly formed Heater Division of La Salle Lighting Products, Inc., of Buffalo, N. Y., in a nationwide direct mail campaign addressed to jobbers, dealers and util-



ity companies. The new series includes portable and built-in-wall electric heaters designed to do two jobs instead of the usual one. While a glowing red element furnishes a full volume of direct radiant heat, a second element, assembled with powerful fan, circulates a steady current of comfort-giving warm air throughout the room.

Another feature of the new La Salle line is a 1320-watt fan-driven portable heater retailing at $6.95, but comparing favorably in appearance and performance with higher priced heaters.

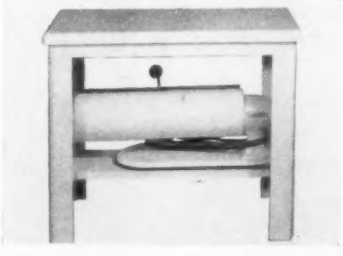
New Cory Coffee Brewer

Cory Coffee Brewer Corporation has introduced a new home model named "Step Saver." The electric unit is ingeniously incorporated in the serving tray. The bottom of the special decanter (lower glass) "nests" into the heating element on one side, and into the built-in rest on the other. This new Cory Brewer is brought to the table with the coffee in the upper glass and the water in the lower glass, ready for smart brewing and serving at the table. Hence the name "Step Saver." Action starts with the "snapping on" of "high" heat. When brewing action is completed, the brewer is shifted from the heat to the cool rest, where filtering quickly takes place. The upper containing the grounds is transferred to the Cory Funnel Holder and the Decanter full of Cory-brewed coffee is placed back on the heat,

using "low." There it is kept at correct serving temperature until the very last cup has been served. The "Step Saver" adds only one piece of glass—the special lower—to the jobber's replacement stock.

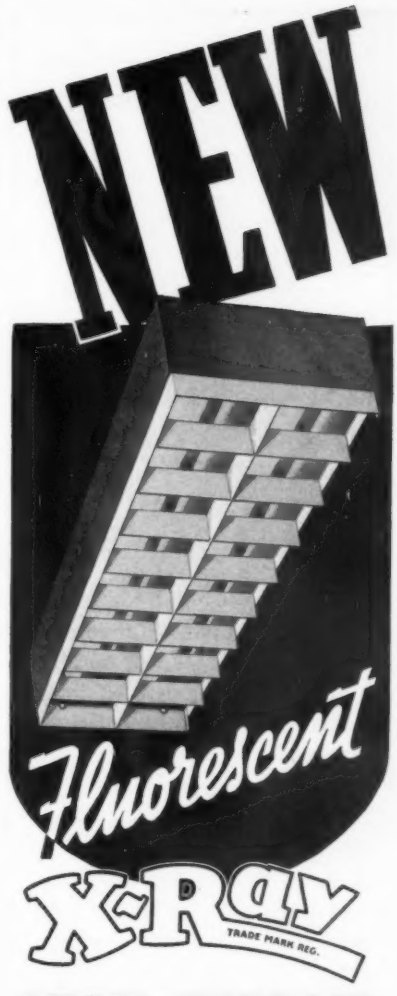
Hotpoint Ironer Accessories

To aid Hotpoint retailers in promoting the profitable Priscillaette portable ironer, the Hotpoint Sales Promotion Department has just announced a new all-steel table and chair, available singly or together at spectacularly low cost. The table, finished in sparkling white, is exactly the right height for comfortable ironing. Its lower shelf provides plenty of leg room, when ironing, as well as storage space for the Priscillaette, when not in use. With the ironer on its storage shelf, the tabletop provides 30½x15½ inches of useful work surface.



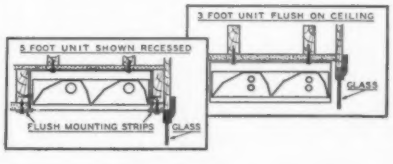
The Hotpoint ironing chair is of modern tubular steel. Seat and back are of steel, finished in red enamel.

Hotpoint is suggesting to retailers that they offer the entire group (Priscillaette, table and chair) with a Hotpoint washer, as a complete low-cost home laundry.

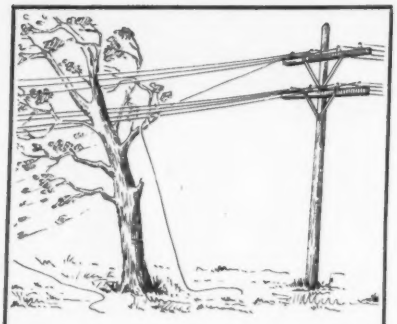


SHOW WINDOW LIGHTING UNITS

Punch the light down on the merchandise . . . use 3 foot and the new 5 foot lamps in polished Alzak reflectors. Specially designed for *controlled* lighting. Write today for your copy of descriptive folder.



Curtis
LIGHTING
1123 West Jackson Blvd.
NEW YORK CHICAGO TORONTO



BLITZKREIG
by wind against
TREES
wrecks havoc with
LINES——

"Making you wish that you had your wires cleared of swaying branches that cause so much trouble to the smooth flow of electric current for light, power and communications. Our organization with its staff of tree experts is at your service to help you solve your line clearance problems economically. One of our several types of contract will serve your individual needs. For full details, write or phone the Asplundh Tree Expert Company, Jenkintown, Penna., Ogontz 3750."

Branch Offices:
Chicago, Illinois Randolph 7773
Binghamton, N. Y. Binghamton 4-5314
Columbus, Ohio Adams 5432
Washington, D. C. Shepherd 6115
Baltimore, Md. Plaza 7656
Alexandria, Va. Alexandria 3581
Pittsburgh, Pa. Atlantic 9798
New Castle, Pa. New Castle 2285
Rutherford, N. J. Rutherford 2-7434

ASPLUNDH
TREE EXPERT
COMPANY
Line Clearance Exclusively

New 100-Watt Fluorescent Lamp

A new 100-watt fluorescent lamp, the largest yet made and possessing over twice the power of any such lamp heretofore manufactured for commercial and industrial purposes, has just been announced by the Westinghouse Lamp Division, General Electric Co., and Hygrade Sylvania Corp.

Five feet long and 2⅛ inches in diameter, it will be available in the 3500° white color, which has proved most popular and adaptable to the greatest number of uses. The 100-watt lamp adds a seventh size to the line of fluorescent lamps now manufactured.

The lamp is intended for use in stores, offices, industrial plants, and elsewhere. Allowing higher mounting heights, it will reduce the size and number of fixtures necessary to supply a given amount of light. The new lamp has a rated initial output of 4400 lumens and a rated life of 2000 hours.

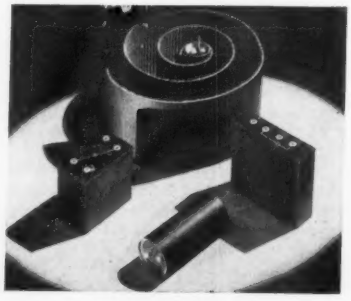
Motor Starting Capacitors

A new line of a-c motor starting capacitors, of less weight, lower cost and smaller size than the cumbersome original product of several years ago, and a universal system for industrial capacitor replacement, have just been announced by P. R. Mallory & Co., Inc., Indianapolis, Ind.

Round types are housed in the smallest diameter and shortest height metal containers possible. Each unit is wrapped in a specially developed "size adjuster" for use when replacing original units of greater diameter and height. The corrugated adjuster is clearly calibrated for all popular sizes and may be readily cut with a knife or shears.

Rectangular types in three universal sizes are packed with complete hardware to replace original capacitors of either lead, solder lug, or stud types.

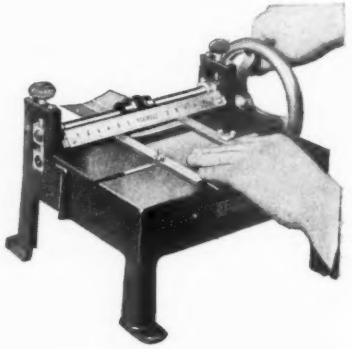
A new catalog with complete details and replacement recommendations may be had on request.



New Insulation Former

Forms either plain or cuffed insulation or any length and up to 8" maximum width. It makes neat fitting and uniform slot linings to speed up winding and prevent burned out armatures caused by winding being torn when coils are tamped.

The machine operates by turning a hand crank while insulation is accurately guided between a rubber roller and two creasing rollers by two aluminum brackets. The rubber roller protects the insulation and prevents the creasing roller from cutting through.



Any desired width of trough up to 1½" may be obtained by adjusting the span between the two hardened steel creasing rollers. The creasing roller assembly is also adjustable for position of trough on insulation. Spring pressure between the rollers allows for different thicknesses of insulation.

This new insulation former is announced by the Ideal Commutator Dresser Company, Sycamore, Illinois.

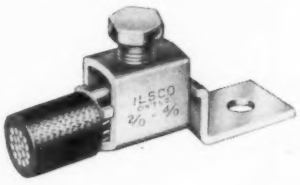
New Caulking Compound

To meet the need for an oil-resisting electrical caulking matrial for transformer and oil switch bushings and covers, the Johns-Manville Research Laboratories have developed a new, permanently plastic substance called petroseal, a compound that is equally adaptable to any electrical apparatus employing transil oil, according to an announcement recently issued by Johns-Manville.

Petroseal is described as a non-hardening, adhesive, plastic compound which will not slump or flow, nor dry out or check. It remains easily workable over a wide range of temperature. It adheres readily to any clean, rust-free surface, yet can be easily removed and salvaged. The material has good dielectric strength and is not injurious to workers' hands.

Solderless Lugs and Connectors

A new line of solderless lugs and solderless connectors are announced by Ilsco Copper Tube & Products, Inc., Cincinnati, Ohio. The new lugs and connectors have the bearing surface of their tongues arched to fit the curve of conductors held . . . so that maximum contact between



tongue and conductor is assured, and tongue pressure is distributed over the curve of wires held. The arch also strengthens the tongue considerably. Short, bar-like ridges or ribs project from inner, sloping walls of V-bottom collar, to assist in gripping wires "for keeps."

G-E Open Fuse Cutouts

A new open fuse cutout for use on distribution circuits of 15,000 volts and below is announced by the General Electric Company. The new unit features a totally enclosed contact construction for protection against snow and dirt, corrosion caused by weathering, and the formation of ice on the contacts. The toggle mechanism and lower contact are also enclosed.

In the operation of the new cutout, contact is made by heavy spring contacts which press down against the horizontal contact on the fuseholder cap. When the fuse link melts, contact is maintained for 10 to 15 cycles, after the fuseholder has dropped, to provide time delay for clearing the short-circuit current arc within the tube—thus the contacts do not have to interrupt short-circuit currents.

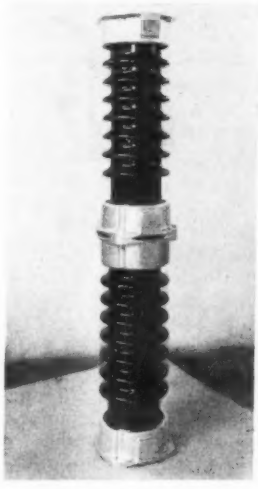
In addition to the new features, the announced cutout incorporates such features of the superseded unit as the recoil-proof fuseholder, which prevents unseating of the fuseholder, seamless fuse tube, and interchangeable fuseholders.

New Lightning Arresters

A new line of Type "LV" unit design lightning arresters covering the range from 20-kv to 73-kv, and designed primarily for the small substation where reliable protection at low cost is the watchword, is announced by the Westinghouse Electric & Manufacturing Co. Complete arrester units 20, 25, 30, and 37 kv consist of three inch diameter porous block elements, and a multiple series gap of resistance type spacers, and metal electrodes. Entire assembly is encased in wet process porcelain, hermetically sealed.

Following unit design practice, units above 37-kv consist of combinations of two single units, for instance, a 40-kv arrester would consist of two 20-kv units, etc. The two units combine to form one integral arrester.

Features include absolute moisture proofing, brought about by the solder hermetical seal at each end casting. Greatest improvement is in protective ability against lightning, every arrester being guaranteed to discharge at least 65,000 surge amperes on a 5-10 micro-second wave.



This is possible because of the three inch diameter resistance blocks, formerly used only on arresters rated 50 kv and above. Gap breakdown is uniform and stabilized by the resistance type spacers and metal electrodes. To insure their handling "long-tail wave" lightning, and freedom from radio interference each arrester is tested in the laboratory under rated power voltage.

Requirements Changed For Branch Circuits

(*Continued from page* 29)

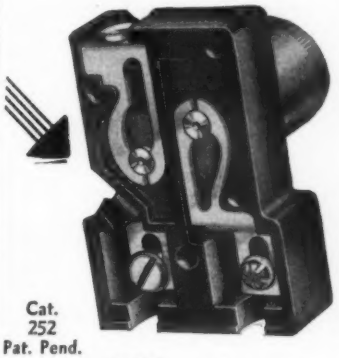
such units provided the lampholder base is of the porcelain keyless type, part of a lighting unit directly connected to the permanent wiring system, and controlled by a switch.

It should be noted that this new ruling will permit the installation of lights on the No. 12 wire circuits required for the laundry outlets. In many cases the laundry is located in an isolated shed away from the main building. At present it is necessary to extend a separate two-wire circuit for the lights if a No. 12 wire extension is made to the receptacle for the washing machine from a 20 ampere circuit.

The final section 2135c for the installation of fixed appliances has been revised to include the three conditions outlined for the 15 ampere circuit discussed above.

Section 2142 for the 25 ampere branch circuit has been revised to call for conductors with a minimum

ALWAYS A STEP AHEAD



Cat. 252 Pat. Pend.

Lloyd STARTER SOCKET

- "One-Piece" Dual Spring Action
- Unfailing Contact
- Greater Efficiency
- Longer Life

All Items Approved and Listed by Underwriters' Laboratories Incorporated

Lloyd STARTER

Certified by Electrical Testing Laboratories Spec. 6

Cat. FS-2 FS-4 Pat. Pend.

- Starts Quickly
- Built for Longer Life
- Try Lloyd Starters and be convinced

LLOYD PRODUCTS CO.
P. O. Box 126, Edgewood Sta., Providence, R. I.
GEO. E. ANDERSON CO.
Sante Fe Bldg., Dallas, Tex.
S. L. BAGBY CO.
606-612 So. Ment Street, Charlotte, N. C.
E. B. HENDERSON
710 No. 12th Boulevard, St. Louis, Mo.
Sales Representatives in 17 Principal Cities

A COMPLETE LINE OF CONDUIT BENDERS

Here are just two of the complete line of Greenlee Benders for any size conduit, pipe, or tubing from ¼ to 4½-inch size. Small hand benders will handle all tubing up to ¾-inch, while for rigid and thin-wall conduit, pipe, bus-bars, and the larger sizes of tubing, powerful hydraulic units are available. Write for detailed information about this complete line of benders and attachments.

The Greenlee No. 770 Bender shown above, designed for bending conduit and pipe from 1¼ to 3-inch size, has a maximum hydraulic piston pressure of 25 tons. A similar bender, the No. 775, has a more powerful hydraulic unit with a maximum piston pressure of 40 tons for bending 3 to 4½-inch conduit.

This Greenlee No. 770-T Hydraulic Bender for bending thin-wall Electric Metallic Tubing, consists of the No. 770 Power Unit equipped with special attachments designed to make a full 90° bend quickly with one forward movement of the ram. These attachments are easily and quickly applied to the No. 770 Power Unit.

GREENLEE TOOL CO.
1707 Columbia Ave., ROCKFORD, ILL.

current carrying capacity of 25 amperes. This was discussed above with reference to a similar change in the 20 ampere branch circuit requirements.

The 1940 revision of Section 2145 prohibits the installation of medium base and smaller size lampholders on 25 ampere circuits. The paragraph on fixed appliances has been revised in a manner similar to that discussed above for the 15 ampere circuit.

The scope of application of the 35 and 50 ampere branch circuit has been revised. In the 1937 Code, the use of these high capacity branch circuits was prohibited in dwelling occupancies. The 1940 revision permits the limited installation of these circuits in dwellings.

Two definite limitations are set forth for the use of the 35 ampere branch circuit. First, it cannot be installed in dwelling occupancies to supply lampholders. Secondly, it cannot be used under any conditions for service to portable appliances. Stating these requirements in the affirmative it will be noted that 35 ampere branch circuits may be installed in dwelling for fixed appliance loads and for all other occupancies to supply lampholders and/or fixed appliance loads.

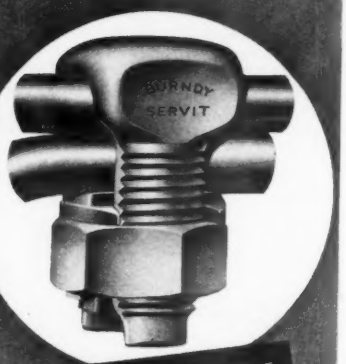
Similar limitations have been placed on the application of the 50 ampere branch circuit. However, a further restriction has been established, in that this type of circuit cannot be used to supply combination lampholders and fixed appliance load.

Portable Appliances

Portable appliances rated 20 amperes or less can be installed on the 15, 20 or 25 ampere circuits. Appliance rated in excess of 20 amperes, cannot as stated in the above discussion of the 35 and 50 ampere branch circuits, be supplied from these circuits. Sections 2151 and 2161 outlining the scope of application for the 35 and 50 ampere branch circuits, respectively, carry a fine print note, which indicates that these larger portable appliances (rated in excess of 20 amperes) must be installed on "Individual Branch Circuits" as shown by Section 2171 through 2175.

The conductor requirements for both these circuits have been revised to show the smallest current carrying capacity for the circuit conductors rather than a minimum size of conductor. This, of course, coincides with the similar change made for the 20 and 25 ampere

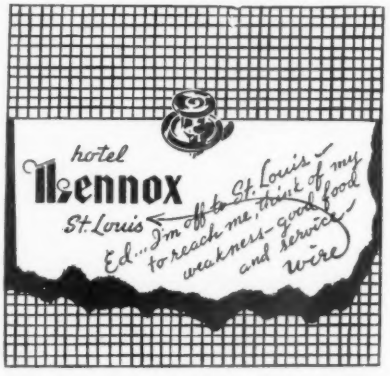
FORGED-IN STRENGTH



BURNDY SERVIT

BURNDY ENGINEERING CO., INC.

ATLANTA, GA.....W. R. Calverly
TAMPA, FLA. ..... Pat Baldwin, Inc.
SUMMERVILLE, S. C.....J. P. Voight
NEW ORLEANS, LA....Electron Eng. Co., Inc.



You'll like the Lennox in St. Louis, too. Here in a handy downtown location, you'll find cheery, comfortable surroundings ... sleep-inviting beds, famous food and drink ... everything to make your stay pleasant.

All rooms have private bath and guest-controlled radio. Rates: 50% of all rooms $3.50 or less, single; $5.00 or less, double.

HOTEL Lennox
9th & Washington • St. Louis, Mo.
Nearby Parking and Garages

circuits.

To correlate the sections outlining the permissible loads with the principles established in the scope of this article, Sections 2155a and 2165a reiterate the prohibition against the installation of lampholders in dwellings on these circuits. Similarly, this is repeated in Sections 2155bl and 2165bl, respectively. Also, Section 2155b2 restates the restriction in the use of receptacles for portable appliances.

In the case of the 50 ampere circuit, the statement is much more definite. In Section 2165b2, the use of receptacles is definitely fixed—only "cooking appliances other than portable" can be installed on receptacles fed from 50 ampere branch circuit. Again in Section 2165c, outlining the requirements for the installation of fixed appliances on 50 ampere branch circuits, is found the definite restriction in the use of this circuit. Only "a group of fixed cooking appliances," "or" (it is to be noted not "and") "a fixed range and water heater" is permitted. The total rating of 50 amperes of course, is permitted since these loads are characteristically stable and unvarying. Furthermore, since a range is very seldom fully loaded, a demand factor for a single range may be applied when calculations are made for loading. The fine print note appended to this section permits this procedure.

Section 2171 through 2175 are new. The application is limited to circuits supplying a single outlet or appliance. Single motors and motor operated appliances do not come within the scope of these rules and must be installed in conformity to the motor rules set up in Article 430.

Th wiring must have sufficient carrying capacity, of course, to supply the load. The overcurrent device may have a setting or rating 50% in excess of the rating of the appliance. There is no limitation as to the maximum load permitted.

If a range, hot plate or a similar appliance having surface heating elements and rated at more than 70 amperes is to be connected to an individual branch circuit, then the appliance must have sub-divided circuits. Each of these sub-circuits must be protected with a fuse or circuit breaker rated 50 amperes or less.

The permissible load may be a single lighting fixture or lampholder, a receptacle feeding a single lighting fixture or lampholder, a receptacle supplying a single appliance of any rating, or a single fixed appliance of any rating.

Motor Rewinding And Repair

(*Continued from page* 31)

sirable to change this motor for 110-volt operation. The value of S is 4 x 220 = 880. Then D = 110, and X = 110/880 = .125 which is found in Table 1 in the eight-pole column on the 8-parallel line. Thus an 8-parallel, star connection will permit operation on a 110 volt line.

If the number X is not found in Table 1, then for a 2 phase motor it indicates that reconnection is impossible, but on three phase motors there is another check to be made as a star to delta or delta to star connection may make the change possible. This will be discussed in next month's article which will also present the ten-pole, three-phase, five-parallel, three-lead diagrams.

Dallas Dealers in Roaster Promotion

(*Continued from page* 10)

line for the first of the June ads was: "No wise cracks about her cooking . . . in an Electric Roaster!" "The Bride's First Meal . . . but she need have no fear about the results."

A follow-up ad during the middle of June was tied in with "Vacation Days" with the headline: "These are Carefree Days when you cook in an Electric Roaster," with appropriate art work depicting children swinging and an older sister approaching with a tray.

Scheduled for August, when Dallas would be hot and every woman intent on keeping out of hot kitchens as much as possible, was one of the strongest selling ads of the series, with intent to take full advantage of the peak selling weeks, as indicated by prior years. Headlined "I'll tell you why cooking is so cool in an Electric Roaster," the 3-column advertisement, carried in three papers, enumerated three principal "whys": Perfect insulation, reliable controls permitting

NO OPEN SEAMS!...
with the NEW BRIEGEL METHOD CONNECTOR

All connectors are finished and smooth with lap seam construction.

A LARGER SHOULDER completely closes the knockout hole in the box.

A NEW, IMPROVED BONDING-TYPE LOCK NUT locks tighter than ever.

FINE SHEET STEEL CONSTRUCTION makes connectors even stronger, neater and more durable. The inbuilt tensile strength of this sheet steel prevents tube end splits.

B-M LOW PRICES MAKE THESE FITTINGS PRACTICAL FOR EVERY SIZE JOB!

½" size now available, other sizes ready soon.

Patents Pending
Approved by Underwriters Laboratories

Distributed By:

The M. B. Austin Co., Chicago, Ill.
Clifton Conduit Co., Jersey City, N. J.
The Steelduct Co., Youngstown, Ohio
National Enameling & Mfg. Co., Pittsburgh, Pa.
Clayton Mark & Co., Evanston, Ill.
General Electric Co., Bridgeport, Conn.
Enameled Metals Co., Pittsburgh, Pa.
Triangle Conduit & Cable Co., Elmhurst, New York City

BRIEGEL METHOD TOOL CO., Galva, Illinois

PROSPECTS KEEP THESE *Autopoint* BUSINESS GIFTS!

Autopoint

BUSINESS GIFTS MAKE SALES COME EASIER

● Thousands of firms have found a way to "keep the Christmas spirit" in customer relations all year! They give Autopoint business gifts that *stay* on prospects' desks, to do a year 'round, day-in, day-out job of reminding and selling. Your messages, imprinted on Autopoint business gifts, become permanent "advertising pieces." Executives — Write for Business Gift Catalog, prices and Free book of "37 Sales Plans." Write today!

No. 52GS—DeLuxe Autopoint Pencil. Gold filled trim, inlaid crown on cap and tip. Made of BAKELITE molding material. Famous Grip-Tite Tip—lead can't wobble, twist, fall out. Available for standard or Real Thin Lead.

No. 52GS

No. A-O—Gift Set — Deluxe oversize Autopoint pencil and black Autopoint two-bladed pen knife. Pencil available for standard or Real Thin Lead.

No. A-O

No. 169—Novel white essence of pearl circular knife. Light, compact — yet sturdy. Ring for pocket or watch chain. Nail file and cutting blade are of high carbon steel.

No. 169

No. 155—Autopoint Memo Case—Flick of the fingers removes a memo sheet from beautiful case made of BAKELITE molding material. Holds 230 loose 4" x 6" sheets. Black or walnut.

No. 155

Autopoint
THE BETTER PENCIL
REG. TRADE MARK

AUTOPOINT COMPANY
1822 West Foster Avenue, Chicago, Ill.

the cook to stay out of the kitchen, and the cooking of entire meals at one time—kept hot, ready to serve.

Demonstration, Display—Factors in Range Selling

(*Continued from page* 9)

purchase of a new range, the average housewife brings into its selection her own particular domestic problems. 'Convenience' to her means an adaptability to her special needs. And, if we are to sell her, it is our job to help her solve them.

"When we have had previous contact with a woman prospect, we usually know her viewpoint, the size of her family, and more or less about its habits, as they relate to the preparation and serving of food. We may know, for instance, that Mrs. Jones has a large family. Naturally, cooking capacity and economy of operation are of prime importance to her. Or different members of her family arrive home for dinner at varying intervals, making it necessary to keep food warm.

"Perhaps working space in her kitchen is limited and she favors an electric range that provides her with a large serving top. In any case, being familiar with her problems, as she sees it, we can stress those features in the ranges we sell that will most likely appeal to her.

"If the prospect is a 'walk in,' as many of them are, we have to find out something of her requirements before we can hope to do an intelligent job of selling her. In the early stages of the contact, we must get across to her the idea that we want to help her in making a wise selection. When properly approached, most prospects will appreciate what impresses them as competent advice. But it *has* to be competent.

"The salesman, who attempts a demonstration without having made himself thoroughly familiar with his line, is sunk before he starts. He very likely is doing one of his competitors a very good turn.

"A clean-cut demonstration should convince the prospective customer of three things: First, that electricity is the one best cooking medium; second, that the range at which she has just looked best fits her requirements; and third, that a new electric range is her biggest immediate need.

"With or without his knowledge, an electric appliance dealer's chief competition on a range deal may not be some other make of range but an entirely different type of merchandise. Frequently, other members of the family have a vote in the final disposition of family funds.

"Mrs. Smith may have set her heart on buying a nice, new deluxe range but Mr. Smith wants to trade in the old car on a new one, while Daughter Sally favors refurnishing the living room. In this case, the electrical appliance dealer has to include the whole family in his sales effort and outsell all competitors.

"Right here I would like to make a suggestion: An electric range demonstration usually is much more effective, if the prospect can be persuaded to participate in it. Encourage her to try the current controls and to handle the range's various accessories. You will get a firmer grip on her interest for one thing. And for another, with her operation of the range comes a tendancy to visualize herself as its owner."

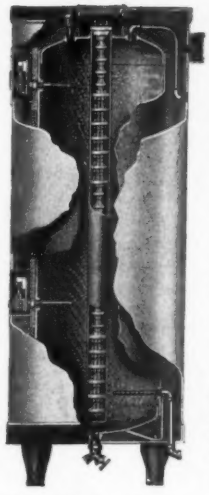
In St. Louis, Hotel Mayfair is the choice of seasoned travelers. They appreciate its downtown location and enjoy its friendly, restful atmosphere, courteous service, comfortable rooms and its restaurants where fine food and drink are traditional.

Every room has private bath, guest-controlled radio. Rates: 50% of all rooms $3.50 or less, single; $5.00 or less, double.

HOTEL
Mayfair
Eighth & St. Charles • St. Louis, Mo.
Nearby Parking and Garages

1915 **SEPCO** 1940

Twenty-five years of Specialization in Electric Water Heaters



Only SEPCO has:

Hi-Speed, No-Burn-Out Unit

Hard, scale-forming water and accidental 'dry' operation has no effect on this heating unit. Fastest heating due to internal circulation.

Genuine Cork Insulation

Retains original high efficiency permanently — uneffected by Moisture will not settle; vermin proof.

Vapor Tension Thermostats;

Principal used in all High Grade Temperature Instruments insures instant and accurate control.

Write today for complete details of our Silver Anniversary Models.

14 Distributors Serving the South

AUTOMATIC ELECTRIC HEATER COMPANY

Pottstown, Penna.

Southern Division Headquarters: P. O. Box 1707, Birmingham, Ala.

Handy Heat On Wheels

just the thing for

OFFICES
BATHROOMS
BEDROOMS
SICK ROOMS
AND SUN PORCHES

or any room where you need occasional, or quick extra heat. Plug in a Cord and there in a jiffy is Radiator Steam Heat. Thermostatic control. Automatic cut-off insures low current cost.

Made in 7 sizes for 110 or 220 volts A.C. or D.C. current. The three larger sizes with no castors, for fixed locations. Shipment within 48 hours. Send for folder ES-2-40.

Burnham Boiler Corporation

IRVINGTON, NEW YORK

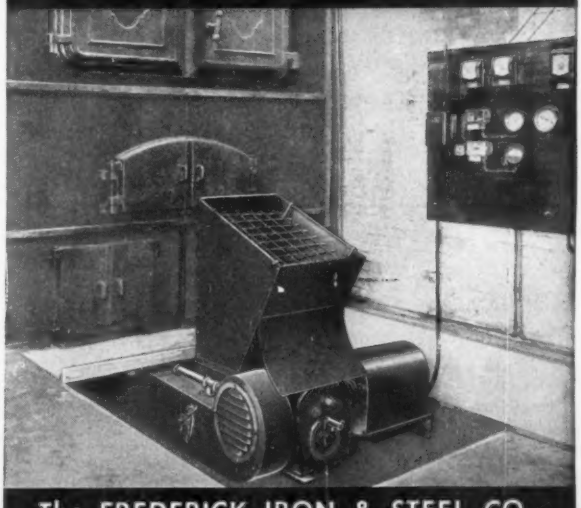
hotel metropole

a stopping place modern in every detail, yet maintaining a friendly atmosphere and hearty hospitality • preferred by experienced travelers • dining room • garage adjacent • rooms from $1.50 • with bath from $2.50

cincinnati, ohio

HERE'S MONEY TO BE MADE!

Every office building and industrial plant in your vicinity is a potential, profitable customer for FREDERICK INDUSTRIAL STOKERS! *Ask about liberal Distributors' Proposition—No obligation of course!*



The FREDERICK IRON & STEEL CO.

"Builders of Good Stokers for 20 Years"

P.R.R. & Eighth St., Frederick, Md.

ADVERTISER'S INDEX

The Advertisers' Index is published as a convenience, and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A

Adam Electric Co., Frank 6
Aluminum Co. of America 2
American Coolair Corp. 52
American Steel & Wire Co. ..... *
Anaconda Wire & Cable Co. 4
Asplundh Tree Expert Co. 46
Automatic Electric Heater Co., Inc. 51
Automatic Electric Mfg. Co. ..... *
Autopoint Co. 50

B

Briegel Method Tool Co. 49
Burndy Engineering Co., Inc. 48
Burnham Boiler Corp. 51

C

Columbia Steel Co. ..... *
Crescent Insulated Wire & Cable Co., Inc. ..... *
Curtis Lighting, Inc. 45

D

Dolph Co., John C. ..... *

E

Edison General Electric Appliance Co. ..... *

F

Frederick Iron and Steel Co. 51
Frigidaire Division ..... Inside Back Cover

G

General Electric Co. (Ranges) 43
General Electric Co., (Varnished Cloth-Tapes) 1
General Electric Co., (Wiring Materials) ..... Back Cover
Graybar Electric Co. ..... Inside Front Cover
Greenlee Tool Company 48

H

Hazard Insulated Wire Works ..... *
Hotel Carter ..... *
Hotel Lennox 48
Hotel Mayfair 50
Hotel Metropole 51
Hubbard & Company 3
Hunter Fan & Ventilating Co., Inc. ..... Front Cover

I

Ideal Commutator Dresser Co. ..... *

K

Kwikon Company ..... *

L

Lloyd Products Co. 47

O

Okonite Co. ..... *

R

Rogers, C. B. ..... *

S

Sangamo Electric Co. ..... *
Signal Electric Mfg. Co. ..... *

U

United States Steel Co. ..... *

W

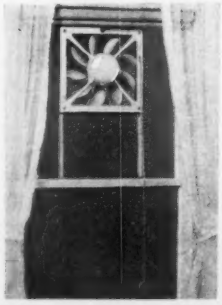
Ward Leonard Electric Co. ..... *
Wiegand Co., Edwin L. 52

Y

Youngstown Sheet & Tube Co. ..... *

You Can
Ring the Christmas Bells
with this smart
Coolair Kitchen Ventilator

Beautifully finished in gleaming white porcelain and shiny chrome plate, this attractive kitchen ventilator is a natural for Christmas promotion and profits. Three wall, two window models from **$19.75**



Write or wire for details.

Coolair Ventilating and Cooling Systems

AMERICAN COOLAIR CORPORATION
Manufacturers . . . . JACKSONVILLE, FLORIDA

MAKE REPLACEMENT BUSINESS *profitable* WITH
CHROMALOX
RANGE UNITS

With a small stock of these units you can fit all ranges, reduce inventory, do the job in one service call, please customers, and lay groundwork for future Chromalox-equipped range sales. Write for details today.

See nearest representative

ATLANTA, Ga. — C. B. Rogers, 1000 Peachtree St.
DALLAS, Texas — L. R. Ward 401 Southland Life Bldg. Annex
RALEIGH, N. C. — W. R. Phillips.
OKLAHOMA CITY, Okla.—Paul Berry, 3128 N. W. 26 St.

EDWIN L. WIEGAND CO., 7600 Thomas Blvd., Pittsburgh, Pa.